4135 Technology Parkway, Sheboygan, Wisconsin 53083

February 13, 2004

Mr. Juan Thomas, MPH
USEPA Region V
RCRA ECAB, DE-9J
77 W. Jackson Blvd
Chicago, IL. 60604

Subject: **Documentation of Environmental Indicator Determinations and Final Corrective Measures Proposal**
Former Stanley Tools Facility
Fowlerville, Michigan
EPA ID#: MID099124299

Dear Mr. Thomas:

Telephone
920.458.8711
Facsimile
920.458.0537

In accordance with Paragraphs 13 and 15 of the Administrative Order on Consent, U.S. EPA Docket No. RCRA-05-2003-0004, Earth Tech and Weston Solutions, Inc. (ETW), on behalf of Johnson Controls, Inc., are submitting the Environmental Indicator (EI) Report for Human Health (CA 725), the EI Report for Groundwater (CA 750), and the Final Corrective Measures Proposal. Both EI documents were modified based on review comments received from the U.S. EPA during our meeting in Chicago, Illinois on December 17, 2003. The Final Corrective Measures Proposal recommends remedies for soil, groundwater, and sediment as outlined to you during our December 17, 2003 meeting.

ETW and Johnson Controls, Inc. appreciate your assistance during the planning and execution of the project activities. Feel free to call me at (248) 779-2812 with any questions or comments regarding the enclosures.

Sincerely,

Earth Tech, Inc.

Andrew J. Lonergan
Project Manager

c: D. Reis, LLC
C. Preston, Entact
P. Bartz, Weston

Enclosures: CA 725
CA 750
Final Corrective Measures Proposal

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA 750)

Migration of Contaminated Groundwater Under Control

Facility Name: Johnson Controls
Facility Address: Fowlerville, Michigan
Facility EPA ID#: MID-099-124-299

1.Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

X If yes – check here and continue with #2 below.

__ If no – re-evaluate existing data, or

__ If data are not available skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993 (GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPL's). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, where practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration/Applicability of EI Documentation

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels"(i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

___X___ If yes – continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

______ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

______ If unknown - skip to #8 and enter an "IN" status code.

Rationale and Reference (s):

Groundwater is known to be contaminated above the National Primary Drinking Water Regulations Maximum Contaminant Levels (MCL's) and the applicable sections of the Michigan Act 451, Part 201 generic cleanup criteria for groundwater. Although there are no present on-site users of groundwater, there are no groundwater use restrictions for the property nor for properties surrounding the site. Hence, the Part 201 Generic Residential Drinking Water Criteria are applicable promulgated standards for on-site groundwater. It should be noted however, that there are no supply wells within 2,500 feet of the site, with the exception of a single house approximately 950 feet due west of the Red Cedar River that has a water well.

Groundwater contaminants exceeding the MCL's based upon groundwater monitoring well samples collected on-site and off-site during November 2003, are comprised of chlorinated volatile organic compounds (VOC's) including trichloroethylene (TCE), cis-1,2-dichloroethene, and vinyl chloride, metals including arsenic, cadmium, and hexavalent chromium, and free cyanide.

Groundwater contaminants exceeding Drinking Water Criteria include vinyl chloride (330 ug/l in November 2003) at monitoring well MW-17 located immediately west of the Red Cedar River, and trichloroethene (3400 ug/l and 2900 ug/l) at monitoring wells MW-02 and MW-01 respectively, located in the southeastern quadrant of the site.

The table below highlights contaminants in the groundwater medium that exceeded Maximum Contaminant Levels (MCL's)

Constituent	Highest Conc. 11/2003 ug/L	Maximum Concentration Level (MCL) ug/L	Well Location with Highest Conc. (11/2003)	Other Well Locations Exceeding MCL (11/2003)	MI Part 201 Drinking Water Criteria ug/L
cis-1,2-dichloroethene (DCE)	600	70	MW-01	MW-02, 03, 05, 06, 08, 17, 25,	70
Trichloroethylene (TCE)	3400	5	MW-02	MW-01, 03, 05, 06, 10, 17, 18, 25, #OE-2, #OE-3	5.0
Vinyl Chloride	330	2	MW-17	MW-02, 12, 08, 09, **0S-3, 10, 11, 18, 19, 23, 26,	2.0
Constituent	Highest Conc. 11/2003 mg/L	Maximum Concentration Level (MCL) mg/L	Well Location with Highest Conc. (11/2003)	Other Well Locations Exceeding MCL (11/2003)	MI Part 201 Drinking Water Criteria mg/L
Arsenic	.131	.010	MW-22	MW-2,	.050
Cadmium	.013*	.005	MW-J2 *		.005
Lead	.0044	.015 ***	MW-28 (12/03)		.004

* indicates that sample was collected 10/2003 ** indicates off-site well (11/2003)
# indicates geoprobe sampling locations (3/2003 – 10/2003)
***Action level concentration given for lead (Pb); no MCL available for Pb. Action level is based on a Treatment Technique that requires public water systems to control the corrosiveness of their water. Action level is not based on groundwater potability.

Reference (s): Summary Report RCRA Facility Investigation, October 2001
Groundwater Environmental Indicators Support Document, Former Stanley Tools, Fowlerville, MI Feb 2004

Footnotes:

"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

____X__If yes - continue after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_______If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_______ If unknown - skip to #8 and enter an "IN" status code.

Rationale and Reference (s):

The migration of groundwater has stabilized as evidenced by a reduction in the size of the plume of VOC constituent concentrations detected in the shallow aquifer. Hydrostratigraphic cross-sections, a top of bedrock contour map, potentiometric surface maps, and groundwater quality data were used to assess groundwater flow and transport conditions and potential groundwater contaminant migration/stabilization. In addition, historical groundwater sampling data was geospatially compared, i.e., in both vertical and horizontal dimensions, to that of more recent groundwater sampling data. Constituents of concern or constituents that exceeded MCL's are cis-1,2-dichloroethene, (cis-1,2-DCE), TCE, vinyl chloride, arsenic, and cadmium. Analysis of these data sets revealed the following: historical TCE, cis-1,2 DCE and vinyl chloride contamination could be geospatially defined by an east-west band extending from the southeastern quadrant of the site to southwestern quadrant of the site extending southwest to the banks of the Red Cedar River. Historical concentrations of TCE in the southeastern quadrant had concentrations of TCE as taken from geoprobe sampling locations of 4800 ug/L (TCE1), to 16000 ug/L (TCE15). Sample location TCE15 was located in the approximate center of the southeast - southwest band. Historical monitoring well and geoprobe groundwater samples for cis-1,2-DCE could also be defined by geoprobe sampling locations TCE-1 (1100 ug/L), TCE-15 (1900 ug/L). In addition, geoprobe groundwater sample locations TCE-16 (1200 ug/L), TCE-37 (8200 ug/L), and TCE-8 (1100 ug/L) all collected in July 2000 exceeded the State of Michigan Part 201 groundwater/surface water interface criteria (GSI), of 620 ppb. More recent groundwater samples collected in November 2003 revealed that the TCE and cis-1,2-DCE plume can be defined by the same well locations (see proceeding table below). TCE samples collected from within this area had concentrations ranging from 1300 ug/L (MW-03), to 3400 ug/L (MW-02) and cis-1,2-DCE ranging from 91 ug/L at MW-06, to 410 ug/L at MW-17. Hence the reduction of concentration as well as the reduction of a geospatial horizontal dimension of TCE and cis-1,2 DCE contaminant distributions appears to indicate that the cis-1,2-DCE plume and TCE plume is shrinking.

Vinyl chloride which is a daughter product of TCE is also shown possibly migrating to the Red Cedar River more specifically, MW-17, and MW-08 had concentrations of 330 ug/L and 130 ug/L, respectively, both collected in November 2003. Monitoring well B-1 collected in October 2003 had a concentration of 250 ug/L. November 2003 groundwater sampling data also indicated that MW-OS3 which is located on the western side of the Red Cedar River had a vinyl chloride concentration of 29 ppb. Because there has not been any data collected from west of the Red Cedar River at MW-OS3 nor from any other monitoring wells west of the Red Cedar River from any historical groundwater sampling events prior to July 2003, (off-site to the west), it is inconclusive whether the plume has migrated beyond its original defined dimensions. The MCL for vinyl chloride is 2 ug/L, hence 10x the MCL is 20 ug/L, and the GSI standard is 15ug/L. The data does not show that there has been any vertical migration of vinyl chloride in any of the monitoring wells because vinyl chloride has been found primarily in the shallow aquifer. There is one deep well (MW-B2) where vinyl chloride was detected in the most recent rounds of sampling, 38 ug/L. However the screening level depth as discerned from well construction diagrams and pieziometric surface map show that the well screen was installed at two distinct geological regions (i.e., shallow and intermediate aquifers).

Groundwater monitoring well sample locations that exceed groundwater quality standards are presented below.

Constituent	Highest Conc. 11/2003 ug/L	Maximum Contaminant Level (MCL) ug/L	Applicable GSI Criteria ug/L	Well Locations exceeding GSI (11/2003)	Well Locations Exceeding MCL (11/2003)
cis-1,2-dichloroethane (DCE)	600 (MW-01)	70	620	---	MW-02, 03, 05, 06, 08, 17, 25,
Trichloroethylene (TCE)	3400 (MW-02)	5	200	MW-01, 02, 03 05, 06, 17, 25,	MW-01, 02, 03, 05, 06, 10, 17, 18, 25,
Vinyl Chloride	330 (MW-17)	2	15	MW-02, 08, OS3, 10,	MW-02, 08, 09, 0S-3, 10, 11, 12, 18, 19, 23, 26,
Constituent	Highest Conc. 11/2003 mg/L	Maximum Contaminant Level (MCL) mg/L	Applicable GSI Criteria mg/L	Well Locations exceeding GSI (11/2003)	Well Locations Exceeding MCL (11/2003)
Arsenic	.131 (MW-22)	.010	.15	None	MW-22, MW-23,
Cadmium	.013* (MW-J2)	.005	.0062	MW-J2	MW-J2
Copper	.148 (MW-08)	1.3	.029	MW-08, 18, 20,	None
Nickel	1.07 (MW-25)	3.6 (PRG)**	.17	MW- 08, 25,	None
Chromium	.02 (MW-08, & 22)	0.1	.011	MW-08, 22	None
Cyanide	.04 (MW-18)	0.2	.005	MW-05, 06, 08, 09, 13, 13C, 14, 14C, 15, 15C, 17, 18, 19, 22, 23, Os1, OS3C	None

The groundwater flow conceptual model for the study area is comprised primarily by groundwater flowing towards and discharging to the Red Cedar River. Shallow groundwater from uplands east and west of the Red Cedar River flows toward the Red Cedar River, located on the western site boundary.

There are four significant conditions that can be used to establish and verify the stability of the current area of shallow aquifer groundwater contamination. The first condition is the low permeability soils and resulting aquitard that underlies the shallow aquifer and restricts the downward migration of groundwater contaminants.

The second condition is the westerly groundwater flow direction of the shallow aquifer across the site, with groundwater discharging into the Red Cedar River bordering the western site boundary. The Red Cedar River is a local groundwater discharge area that functions as a natural hydraulic barrier preventing the westerly migration of contaminants beyond the local discharge area. Contaminants in the lower unconsolidated deposits are less subject to groundwater transport due to lower hydraulic conductivities, but the ultimate destination for mobile constituents is the river's lowland/floodplain discharge area.

The third condition is the source excavation project that was conducted during the summer and fall of 2003. Approximately 83,900 tons of contaminated soil was excavated across the site to water table depth at approximately 95% of the site. This effort effectively removed all remaining contaminants formerly present within the vadose zone, capillary fringe, and top portion of the saturated zone across the site. Included in this massive excavation was the elimination of phase-separated hydrocarbons beneath SWMU C. The excavated area was backfilled with clean fill material consisting of various grades of sand, some silt, and lenses of clay materials.

The fourth condition is the absence of a dense non-aqueous phase liquid (DNAPL) at the site, which is demonstrated based on several site characteristics. No VOC groundwater concentrations meet or exceed 1% of their respective solubility's in water, a *rule of thumb* benchmark indicating potential DNAPL. Wells with the highest VOC detections are all located within the eastern half of the site, and each of these well screens extends to the aquitard, thereby providing "worst-case" groundwater chemistry data that would indicate whether DNAPL is present along the aquitard surface. The monitoring well network within and adjacent to the VOC plume footprint is comprised of at least 10 wells having screens at or straddling the aquifer-aquitard contact, which provides excellent groundwater and DNAPL monitoring capabilities. Geoprobe sampling depths of up to 17.5 feet have characterized groundwater quality to within two feet of the aquitard surface. The aquitard surface is relatively flat across the majority of the eastern on-site area, with aquitard surface elevations decreasing (i.e. sloping toward) the south and west of MW-01. Further off-site to the east, the aquitard surface elevation decreases toward new monitoring well MW-28, which did not exhibit any VOC detections indicative of DNAPL. Shallow groundwater samples were collected at 8 locations east of the site during 2003. While the clay aquitard surface was not encountered, the highest VOC detection from those samples was 9.2 ppb of TCE, indicating DNAPL (if ever present) has not migrated via gravity flow eastward from the MW-02 area.

In summary, based on groundwater discharge to the Red Cedar River, the aquitard underlying the shallow aquifer, the close proximity of the contaminated groundwater to the discharge area, the removal of contaminant source materials across the site using interim remedial measures, and the lack of a continuing contaminant source due to the demonstrated absence of any DNAPL beneath the site, contaminated groundwater is expected to remain within the current horizontal and vertical dimensions of the existing area of groundwater contamination.

Reference (s): Summary Report RCRA Facility Investigation, October 2001
Groundwater Environmental Indicators Support Document, Former Stanley Tools, Fowlerville, MI Feb 2004
JCI Fowlerville Teamlink Website, https://westonproject.net/

Footnotes:

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

__X__ If yes - continue after identifying potentially affected surface water bodies.

______ If no - skip to #7 (and enter a "YE" status code in #8, if #7=yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

______ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The site is located on the eastern bank of the Red Cedar River. Impacted groundwater from the site discharges to the Red Cedar River.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_______ If yes,-skip to #7 (and enter "YE" status code in #8 if #7=yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

___X___ If no, (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s),"and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_______ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

The discharge of contaminated groundwater into surface water is of significance due to the detections of three constituents in concentrations greater than ten times their respective maximum contaminant levels. TCE: seven groundwater monitoring installations located primarily in southeastern and southwestern quadrants of the site had detections of trichloroethylene (TCE), greater than 50 ug/L. (Note the MCL for TCE is 5 ug/L). These samples were collected in the November 2003 sampling round and are representative of groundwater quality conditions of the shallow aquifer; Vinyl Chloride: vinyl chloride was detected in six groundwater monitoring wells collected during the November 2003 sampling round. Monitoring well locations, MW-09 to MW-08 form a north-south band extending approximately 250 feet wide from the north central area of the site down to the southwestern quadrant of the site. The concentration of vinyl chloride detected in these six wells range from 28 ug/L to 338 ug/L. The MCL for vinyl chloride is 2 ug/L; Arsenic: only one groundwater monitoring well location (MW-22) exceeded ten times the MCL (As MCL = .010 mg/L). The concentration detected during the November 2003 sampling round was .13 mg/L. MW-22 is located in the upper northwestern quadrant of the site near the Red Cedar River. The table below list well locations that were detected with significant concentrations of contaminants, i.e., ten times the maximum contaminant level.

Constituent	MCL	10X MCL	Location (ug/L)	Aquifer	Date of Sample
TCE	5 ug/L	50 ug/L	MW-02 (3400) MW-01 (2900) MW-05 (2100) MW-03 (1300) MW-17 (300)	Shallow	Nov. 2003
Vinyl Chloride	2 ug/L	20 ug/L	MW-02 (28) MW-08 (130) MW-09 (2.9) MW-OS3 (29) MW-10 (23) MW-11 (2.5) MW-17 (330) MW-18 (14) MW-19 (7.5)	Shallow	Nov. 2003
Arsenic	10 ug/L	100 ug/L	MW-22 (131)	Shallow	Nov. 2003

Reference: Summary Report RCRA Facility Investigation, October 2001
Groundwater Environmental Indicators Support Document, Former Stanley Tools, Fowlerville, MI Feb 2004
JCI Fowlerville Teamlink Website, https://westonproject.net

[3]As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be **"currently acceptable"** (i.e., not cause impacts to surface water, sediments, or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

__X__ If yes - continue and either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-system), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment[5], appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

______ If no - (the discharge of "contaminated" groundwater cannot be shown to be **"currently acceptable"**) - skip to #8 and enter the "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

______ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

A Groundwater-surface water mixing zone determination was computed for the three constituents of concern whose concentrations in groundwater were determined to be "significant" based on the constituent's concentrations exceeding "ten times" their respective appropriate groundwater quality level, as indicated in question #5. The constituents are TCE, vinyl chloride and arsenic. Since vinyl chloride represents the worst-case site specific constituent concentration having probability for groundwater-surface water discharge, vinyl chloride in groundwater at MW-17 will be evaluated for its acceptability in discharging into the Red Cedar River. Based on the vinyl chloride concentration calculated in the mixing zone model, the resulting calculated mixing zone concentration i.e., groundwater to surface water discharge, will be compared to the appropriate surface water protection criteria.

Areas of Groundwater Discharge Associated With Current Exceedences in Groundwater

The discharge area is being computed from a horizontal distance of 280', which is the length of the vinyl chloride contamination found in well locations contiguous to the Red Cedar River subsequent to the soil excavation project completed during the summer and fall of 2003. This horizontal plume band can be defined by a northern boundary that extends from 30' north of MW-26, to a southern boundary that extends south to an area just south of the southern drainage ditch. Monitoring well MW-17 located on the northern boundary had a vinyl chloride concentration of 330 ug/L and the south ditch represents an intermediate point between MW-08 and MW-14 (MW-08 had a vinyl chloride concentration of 130 ug/L and MW-14 located on the southern boundary had a concentration of 1.2 ug/L. Since vinyl chloride was found on both sides of the River, the discharge area will be approximated by a horizontal length of 280' x 8' + 8' or 280' x 16' of wetted perimeter = 4480 ft2

A_{VOC} = 280ft x 16 ft = 4,400 ft^2

State of Michigan Department of Environmental Quality (MDEQ) Flow Measurements and Prescribed Low Flow Discharge (Q_{SW}) For the Red Cedar River

The MDEQ completes mixing zone determinations using conservatively derived stream flow values representing a 90-day once in 10-year flow (90Q10). The mean harmonic flow value for the Red Cedar River based on MDEQ measurements taken at the site boundary is 12 cfs. The MDEQ 90Q10 value is 3.8 cfs. For purposes of this EI 750 Determination, the more conservative MDEQ 90Q10 value of 3.8cfs will be used.

$(Q_{SW}) = (3.8\ ft^2/sec)\ (86{,}400\ sec/day) = 328{,}320\ ft^3/day$

Average Value of Horizontal Hydraulic Gradient for the Shallow Aquifer (i)

i = 0.032 ft/ft (the actual gradient measured from MW-17 to the Red Cedar River)

Hydraulic Conductivity (K) From RFI Permeability Tests

K = 3.17 ft/day (geometric mean of all K measurements)

Calculated Groundwater Flux (Q_{gw})

$Q_{gw} = (K)\ (i)\ (A)$

$Q_{gw} = (3.17\ ft/day)\ (0.032\ ft/ft)\ (4{,}400\ ft^2) = 446\ ft^3/day$

Estimated Surface Water Concentrations (C_{sw}) After Discharge

Concentrations in surface water computed using the following model:

$(C_{gw})\ (Qgw) = (Csw)\ \{(Qgw + (0.1)\ (Qsw)\}$

Cgw = vinyl chloride concentration in groundwater at MW-17 330 ug/L
Qgw = 446 ft^3/day, calculated groundwater flux

Csw = X (concentration of vinyl chloride in surface water body i.e., Red Cedar River)

Qsw = = 328,320 ft^3/day, surface water body flow rate

The table below illustrates the resulting surface water concentrations of the three site-specific constituents of concern using the mixing-zone model. The modeled concentrations are then compared to most recent surface water quality data as well as the State of Michigan, Part 4, Rule 57 Water Quality Values which are the appropriate surface water quality criteria for the JCI site. The State of Michigan, Part 4, Rule 57 Water Quality Standards are calculated surface water quality values to protect human, wildlife and aquatic life.

Constituent	Groundwater Sample (ug/L)	Surface Water Sample ug/L	MI Rule 57 Water Quality Value ug/L	Calculated Groundwater Discharge (Mixing Zone) ug/L	Conc. Acceptable Passes or Fails MI Rule 57 Water Quality Criteria
Vinyl Chloride	330	.62J	13 (HCV non-drink)	4.42 (a)	Passes Criteria
TCE	300	11	550 HNV non-drink)	4.02 (a)	Passes Criteria
Arsenic	131	2.3 – 4.5	280 HNV (non-drink)	1.75 (a)	Passes Criteria

The resulting estimated surface water constituent concentrations computed from the mixing zone model, illustrates that all three constituents of concern, i.e., vinyl chloride, TCE, and As, are all within the State of Michigan Part 4, Rule 57 Water Quality Criteria. Hence the current groundwater discharge of vinyl chloride can be considered currently acceptable.

In addition, vinyl chloride, TCE and As concentrations are expected to decline over subsequent groundwater sampling events due to the massive excavation of contaminated soil in 2003 that effectively removed the most significant continuing source area of chlorinated solvents to shallow groundwater at the site. In addition, groundwater remediation activities may be implemented in the future, if necessary, should increased concentrations, newly identified Rule 57 exceedences, or plume rebound effects be identified during the groundwater monitoring program.

Reference (s): Summary Report RCRA Facility Investigation, October 2001
Groundwater Environmental Indicators Support Document, Former Stanley Tools, Fowlerville, MI Feb 2004
JCI Fowlerville Teamlink Website, https://westonproject.net

Footnotes:
a - mixing zone calculated using 90 day once in ten year flow (90Q10) of 3.8 ft3/sec
HNV – Human noncancer cancer value, drinking and non-drinking as per Rule 57 Water Quality Values
HCV – Human cancer cancer value, drinking and non-drinking as per State of Michigan Rule 57 Water Quality Values

7. Will groundwater **monitoring**/measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

______ If no, enter a "NO" status code in #8.

______ If unknown - enter an "IN" status code in #8.

Rationale and Reference(s):

Groundwater monitoring/measurement data will be collected in the future to verify that contaminated groundwater has remained within the horizontal and vertical dimensions of the existing area. Future groundwater sampling will be conducted both on-site and off-site to confirm the findings of the 2003 groundwater study and to further characterize the nature and extent of groundwater contamination over time. Long-term groundwater sampling will also allow the assessment of anticipated beneficial effects resulting directly from the massive removal of the contaminated soil from the site during 2003. A groundwater monitoring program consisting of a total of seventeen monitoring wells will be established to monitor the existing contaminated groundwater area. Of the seventeen groundwater monitoring wells, two wells are located upgradient of the facility and the remaining fifteen wells are located to monitor down and side gradients of the former regulated units and solid waste management units (SWMU's).

Future groundwater sampling will be conducted on a semi-annual basis for the next two-year period. Groundwater sample analyses will include metals, including arsenic, cadmium, copper, nickel, chromium and lead, cyanide, polychlorinated biphenyls, semi-volatile organic compounds including cis-1,2-DCE, and VOC's, including TCE and vinyl chloride on selected well samples. Following the two-year sampling period, the frequency of sampling and parameters selected for analysis will be re-evaluated based on an assessment of past water quality data.

Groundwater level measurements will be conducted for the next two-year period on a semi-annual basis. The groundwater level measurements will be evaluated and groundwater flow direction confirmed to verify that contaminated groundwater flow paths remain within the horizontal and vertical dimensions of the existing area of contaminated groundwater. The table below summarizes the groundwater monitoring wells for the proposed groundwater monitoring program and the attached map illustrates their locations.

Monitoring Well Identification	Location
MW-02	Shallow
MW-11	Shallow
MW-14	Shallow
MW-17	Shallow
MW-21	Shallow
MW-22	Shallow
MW-24	Shallow
MW-25	Shallow
MW-26	Shallow
MW-28	Shallow
MW-B1	Shallow
MW-OS3	Shallow
MW-OS3C	Deep
MW-28C	Deep
MW-B2	Deep
MW-J2	Deep
MW-OS1C	Deep

Reference (s): Summary Report RCRA Facility Investigation, October 2001
Groundwater Environmental Indicators Support Document, Former Stanley Tools, Fowlerville, MI Feb 2004
JCI Fowlerville Teamlink Website, https://westonproject.net
Final Corrective Measures Proposal Former Stanley Tools Fowlerville, MI, February 2004

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Former Stanley Too facility, EPA ID# MID099124299, located at 425 Frank Street, Fowlerville, Michigan. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater." This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

______ NO - Unacceptable migration of contaminated groundwater is observed or expected.

______ IN - More information is needed to make a determination.

Completed by (signature) [signature] Date 9/30/2004
(print) Juan Thomas
Ge geologist (title) Environmental Scientist

Supervisor (signature) [signature] Date 9-30-04
(print) George J. Hamper
(title) Chief CA Section, ECAB
(EPA Region or State) Region 5

Locations where References may be found:

USEPA Region 5
Records Center, 7th Floor
77 W. Jackson
Chicago, IL. 60604

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(e-mail)	Thomas.juan@epa.gov

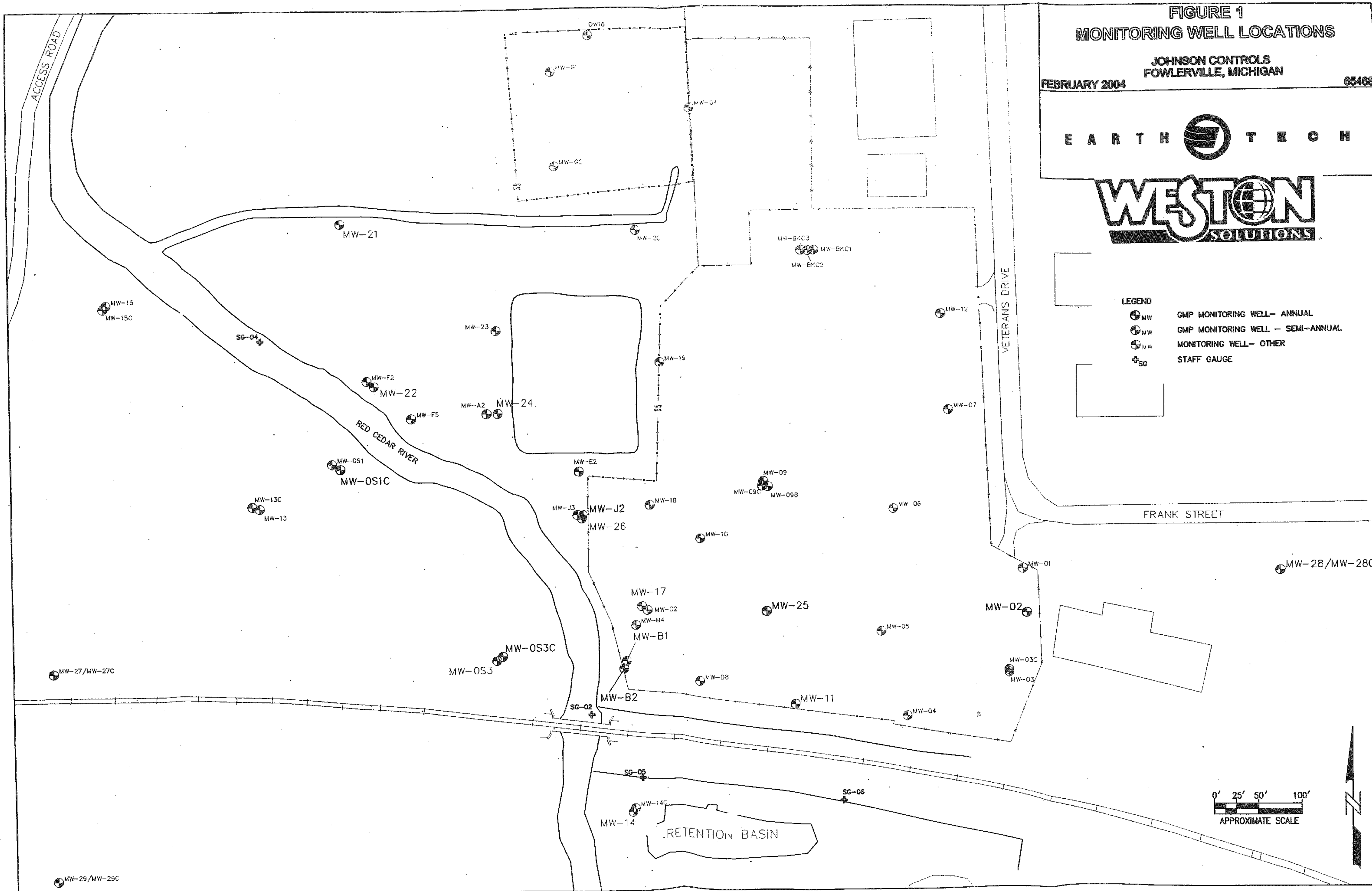


FIGURE 1
MONITORING WELL LOCATIONS
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
FEBRUARY 2004
65468
EARTH TECH
WESTON SOLUTIONS
LEGEND
GMP MONITORING WELL– ANNUAL
GMP MONITORING WELL – SEMI-ANNUAL
MONITORING WELL– OTHER
STAFF GAUGE
ACCESS ROAD
RED CEDAR RIVER
VETERANS DRIVE
FRANK STREET
RETENTION BASIN
MW-21
MW-15
MW-15C
SG-04
MW-23
MW-19
MW-12
MW-F2
MW-22
MW-A2
MW-24
MW-F5
MW-07
MW-0S1
MW-0S1C
MW-E2
MW-09
MW-09C
MW-09B
MW-13C
MW-13
MW-J3
MW-J2
MW-26
MW-18
MW-06
MW-10
MW-01
MW-28/MW-28C
MW-17
MW-C2
MW-25
MW-02
MW-B4
MW-05
MW-B1
MW-0S3C
MW-0S3
MW-27/MW-27C
MW-03C
MW-03
MW-08
MW-11
MW-B2
SG-02
MW-04
SG-05
SG-06
MW-14C
MW-14
MW-29/MW-29C
0' 25' 50' 100'
APPROXIMATE SCALE

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA 750)

Migration of Contaminated Groundwater Under Control

Facility Name: Johnson Controls
Facility Address: Fowlerville, Michigan
Facility EPA ID#: MID-099-124-299

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   X If yes – check here and continue with #2 below.

   ___ If no – re-evaluate existing data, or

   ___ If data are not available skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993 (GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated groundwater and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, where practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration/Applicability of EI Documentation

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

__X__ If yes – continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

______ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

______ If unknown - skip to #8 and enter an "IN" status code.

Rationale and
Reference(s):

Groundwater is known to be contaminated above the appropriate protective levels. The site location is shown on **Figure 1.** All figures, tables and appendices referenced on this form are presented in the attached Groundwater Environmental Indicators Support Document. The applicable promulgated standards for groundwater known or reasonably suspected to be contaminated have been established separately in this evaluation for off-site and for on-site groundwater contamination. The applicable on-site groundwater standards are the Michigan Act 451, Part 201 Generic Groundwater/Surface Water Interface (GSI) Criteria established under Michigan's Natural Resources and Environmental Protection Act (NREPA) because groundwater from the site discharges to the Red Cedar River. There are no on-site users of groundwater. JCI will establish groundwater use restrictions for the property and, therefore the Part 201 Generic Residential Drinking Water Criteria are not applicable promulgated standards for on-site groundwater.

The applicable off-site groundwater standards are the Part 201 Residential Drinking Water Criteria and/or the GSI Criteria. Drinking Water Criteria are applicable because groundwater use restrictions are currently not in place for properties surrounding the site. It should be noted however, that there are no supply wells within 2,500 feet of the site, with the exception a single house approximately 950 feet due west of the Red Cedar River that has a water well. Part 201 GSI Criteria are also applicable for off-site areas where groundwater is flowing toward and discharging to the Red Cedar River.

Groundwater contaminants exceeding the GSI Criteria, based upon groundwater monitoring well samples collected on-site and off-site during September and October 2003, are comprised of chlorinated volatile organic compounds (VOCs) including trichloroethene, cis-1,2-dichloroethene, and vinyl chloride, metals including arsenic, cadmium, and hexavalent chromium, and free cyanide. **Figure 2** presents the locations of monitoring well samples that exhibited GSI exceedances. A summary of the laboratory analytical data for on-site and off-site groundwater monitoring wells exceeding GSI Criteria is presented on **Table 1**. A complete tabulation of laboratory results for groundwater samples collected in 2003 are presented in **Appendix A**.

Part 201 also provides generic cleanup criteria for other groundwater exposure pathways. These include: Groundwater Contact and various Volatilization to Indoor Air Inhalation Criteria. None of these criteria were exceeded by any monitoring well sample analyzed during 2003 (**Table 1**), and the exposure pathways are not complete.

Off-site groundwater contaminants exceeding Part 201 Generic Residential Drinking Water Criteria have been evaluated based upon monitoring well samples collected off-site between September 2003 and January 2004, and groundwater samples collected using a Geoprobe rig between March and October 2003. Groundwater contaminants exceeding Drinking Water Criteria include vinyl chloride (29 ug/l in November 2003) at monitoring well MW-0S3 located immediately west of the Red Cedar River, and trichloroethene (50 ug/l and 9.2 ug/l) at Geoprobe borings OE-2 and OE-3, respectively, immediately upgradient of the east property line. **Figure 3** presents the locations of all off-site groundwater samples that exhibited Drinking Water Criteria exceedances. A summary of the laboratory analytical data for off-site groundwater samples exceeding Drinking Water Criteria is presented on **Table 1**.

Footnotes:

[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

____X__If yes - continue after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_______If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_______ If unknown - skip to #8 and enter an "IN" status code.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

Rationale and
Reference(s):

The migration of contaminated groundwater has stabilized and is expected to remain within the existing area of contaminated groundwater. Hydrostratigraphic cross-sections, a top of bedrock contour map, potentiometric surface maps, and groundwater quality data were used to assess groundwater flow and transport conditions and potential groundwater contaminant migration/stabilization. Most of the detected groundwater contaminants (VOCs, metals, and cyanide) that exceed the GSI Criteria and all of the off-site contaminants that exceed the Residential Drinking Water Criteria, occur in the shallow aquifer, which is the saturated portion of the relatively permeable upper unconsolidated deposits. Groundwater monitoring well and off-site geoprobe groundwater sample locations that exceed groundwater quality standards are presented on **Figures 2 and 3**.

The groundwater flow conceptual model for the study area is comprised primarily by groundwater flowing towards and discharging to the Red Cedar River. Shallow groundwater from uplands east and west of the Red Cedar River flows toward the Red Cedar River, located on the western site boundary. The groundwater flow conceptual model presented in **Figure 4** identifies the Red Cedar River groundwater discharge area. Estimated groundwater contour lines were provided for the western side of the river prior to December 2003 well installations. Those subsequent wells installation confirmed the conceptual model (as discussed below).

There are five significant conditions that can be used to establish and verify the stability of the current area of shallow aquifer groundwater contamination. The first condition is the low permeability soils and resulting aquitard that underlies the shallow aquifer and restricts the downward migration of groundwater contaminants.

The second condition is the westerly groundwater flow direction of the shallow aquifer across the site, with groundwater discharging into the Red Cedar River bordering the western site boundary. The Red Cedar River is a local groundwater discharge area that functions as a natural hydraulic barrier preventing the westerly migration of contaminants beyond the local discharge area. Contaminants in the lower unconsolidated deposits are less subject to groundwater transport due to lower hydraulic conductivities, but the ultimate destination for mobile constituents is the river's lowland/floodplain discharge area.

The third condition is the close proximity of the former groundwater contaminant source areas to the local discharge area. Onsite groundwater contaminants in excess of GSI Criteria extend approximately 550 feet upgradient of the river and groundwater flow paths in this portion of the site are directly toward the local discharge area.

The fourth condition is the source excavation project that effectively removed all remaining contaminants formerly present within the vadose zone, capillary fringe, and top portion of the saturated zone across the site. Included in this massive excavation was the elimination of phase-separated hydrocarbons beneath SWMU C.

The fifth condition is the lack of a dense non-aqueous phase liquid (DNAPL) at the site, which is demonstrated based on several site characteristics: No VOC groundwater concentrations meet or exceed 1% of their respective solubilities in water, a *rule of thumb* benchmark indicating potential DNAPL. Wells with the highest VOC detections are all located within the eastern half of the site, and each of these well screens extends to the aquitard, thereby providing "worst-case" groundwater chemistry data that would indicate whether DNAPL is present along the aquitard surface. Additionally, these wells are located within VOC release (or "source") areas, based on vadose zone soil characterizations conducted prior to and during the large scale soil excavation efforts completed during 2003 Interim Measure activities. The monitoring well network within and adjacent to the VOC plume footprint is comprised of at least 10 wells having screens at or straddling the aquifer-aquitard contact, which provides excellent groundwater and DNAPL monitoring capabilities. There are only three plume footprint upper aquifer monitoring well screen bottoms completed above (i.e. not straddling) the aquitard surface: MW-10, MW-17, and MW-26. These wells are all located near the western portion of the site, apart from the VOC "source" areas with the highest likelihood for DNAPL. The aquitard surface is relatively flat across the majority of the eastern on-site area, with aquitard surface elevations decreasing (i.e. sloping toward) the south and west of MW-01. Further off-site to the east, the aquitard surface elevation decreases toward new monitoring well MW-28, which did not exhibit any VOC detections indicative of DNAPL. ETW sampled shallow groundwater at 8 locations east of the site during 2003. While the clay aquitard surface was not encountered, Geoprobe sampling depths of up to 17.5 feet have characterized groundwater quality to within 2 feet of the aquitard surface. The highest VOC detection from those samples was 9.2 ppb of TCE, indicating DNAPL (if ever present) has not migrated via gravity flow eastward from the MW-02 area. There were no VOCs identified above detection limits in December 2003 samples from new eastern off-site well nest MW-28 and MW-28C.

Therefore, the completed site characterization effort, along with the existing monitoring well network, adequately provides short and long term assurances that DNAPL is not present along the upper aquifer-aquitard interface. Based on groundwater discharge to the Red Cedar River, the aquitard underlying the shallow aquifer, the close proximity of the contaminated groundwater to the discharge area, the successful removal of contaminant source materials across the site, and the lack of a continuing contaminant source due to the demonstrated absence of any DNAPL beneath the site, contaminated groundwater is expected to remain within the current horizontal and vertical dimensions of the existing area of groundwater contamination.

The following descriptions of the site hydrostratigraphic units, groundwater flow systems, and detections of groundwater contaminants present a detailed evaluation of the groundwater and contaminant flow regime and support the conclusion that groundwater contamination has stabilized.

Hydrostratigraphic cross-sections were developed from soil boring logs presented in the October 2001 RCRA Facility Investigation (RFI) Report and from more recent borings advanced during 2003to address data gaps. The site hydrostratigraphic cross-sections and the associated cross-section location map are presented on **Figures 5 through 8**. Boring logs and well completion reports are presented in **Appendix B**. The site hydrogeology is characterized by upper unconsolidated deposits that comprise the shallow aquifer, lower unconsolidated deposits comprised of typical aquitard characteristics, and siltstone/shale/sandstone bedrock. The upper unconsolidated deposits are predominantly layers of SW, SP, or SM soils (coarser-grained) that include lenses of CL, ML, and CL\ML soils (finer- grained) based on the Unified Soil Classification System (USCS). Geotechnical laboratory testing results are presented in **Appendix C**. The thickness of the upper unconsolidated deposits is typically between 10 feet and 15 feet. In the RFI, the horizontal saturated hydraulic conductivities in the upper unconsolidated deposits, based on site aquifer tests, were reported to range from 2.4×10^{-4} centimeters per second (cm/s) to 4.8×10^{-3} cm/s. In-situ horizontal hydraulic conductivity testing performed in November 2003 range from 2.2×10^{-3} to 4.6×10^{-3} cm/sec in the upper aquifer In-situ hydraulic conductivity test results from November 2003 are summarized in **Table 2** and the calculations are presented in **Appendix D**.

Prior to the excavation of contaminated soils at the site, the shallow aquifer likely exhibited confined groundwater flow conditions in portions of the site due to an overlying clay layer extending from the ground surface to a depth of approximately 6 to 10 feet. During soil excavation, this clay layer (and associated soil and groundwater/free phase contaminants) were removed and transported off-site for disposal. The resulting excavation was subsequently

backfilled with coarser grained fill material resulting in a shallow aquifer at water table conditions. Comparison of the shallow aquifer groundwater flow direction before and after excavation indicates that no significant change in flow direction has occurred as a result of the contaminated soil excavation activities. Before and after shallow aquifer groundwater flow maps from March 4, 2003, and December 18, 2003, are presented on **Figures 9** and **10**, respectively. The shallow aquifer remains under confined groundwater flow conditions in the eastern portion of the site where excavation activities were not required. The change from confined to unconfined water table conditions does not appear to effect the groundwater flow direction in the upper aquifer. The horizontal extent of excavation activities is presented on **Figure 11**. The vertical extent of soil excavation is presented on the hydrostratigraphic cross-sections present on **Figures 6** through **8**.

The lower unconsolidated deposits are predominantly layers of CL, ML, or CL/ML soils (fine-grained) that include lenses of SW, SP, or SM soils (coarser-grained) based on the USCS. The lower unconsolidated deposits extend from the base of the upper aquifer to the top of bedrock as presented in the hydrostratigraphic cross-sections. The thickness of the lower unconsolidated deposits ranges from about 5 feet to 30 feet. The thickness and configuration of the top of the lower unconsolidated deposits are presented on **Figures 12** and **13**, respectively. As shown on **Figure 12**, the fine-grained lower unconsolidated deposits extend across the site and limit the potential for the vertical migration of contaminants. The surface elevation of the top of the fine-grained lower unconsolidated deposits (**Figure 13**) shows that the surface generally slopes westward across the central portion of the site.

In the RFI, the saturated vertical hydraulic conductivity in the lower unconsolidated deposits, based on laboratory analysis, was reported to range from about 10^{-9} cm/s to 10^{-7} cm/s. Geotechnical samples were recently obtained from the lower unconsolidated deposits at the MW-09 and MW-22 locations and characterized by Geotechnics Laboratory. The results of the geotechnical analysis are provided in **Appendix C**. The sample collected from the MW-9 location at a depth of 15 feet was classified as a SM based on the USCS and had a vertical hydraulic conductivity of $1.4\text{x}10^{-7}$ cm/s. The samples collected from the MW-22 location at depths of 15 feet and 17 feet were classified as SM and CL, respectively. The vertical hydraulic conductivities of the SM and CL samples were $5.7\text{x}10^{-7}$ cm/s and $2.3\text{x}10^{-7}$ cm/s, respectively. In the RFI, the horizontal saturated hydraulic conductivities in the lower unconsolidated deposits based on site aquifer tests were reported to range from $9.5\text{x}10^{-5}$ to $7.4\text{x}10^{-4}$ cm/sec.

The lower Pennsylvanian/upper Mississippian-age bedrock includes siltstone/shale/sandstone. The top of bedrock contour elevation map presented on **Figure 14** was developed based on RFI and 2003 boring logs. The top of bedrock exhibits moderate relief and generally slopes toward the northeast. In the RFI, the reported hydraulic conductivity calculated from slug tests in deep monitoring wells mostly screened within the interface between bedrock and unconsolidated deposits, ranges from $1.7\text{x}10^{-4}$ cm/s to $1.3\text{x}10^{-3}$ cm/s. In-situ hydraulic conductivity testing performed in November 2003 resulted in horizontal hydraulic conductivities ranging from $2.3\text{x}10^{-5}$ to $2.6\text{x}10^{-3}$ cm/sec in newly installed wells completed in the bedrock. In-situ hydraulic conductivity test results are summarized in **Table 2** and the calculations are presented in **Appendix D**.

To evaluate the groundwater flow system in the vicinity of the site, groundwater level measurements were recorded from the groundwater monitoring wells and staff gauges installed in the Red Cedar River. Groundwater monitoring well and staff gauge locations are presented on **Figure 10**. The depth to water measurements, groundwater elevations, well construction data, and identifications of the hydrostratigraphic unit each monitoring well is screened in, are present in **Table 3**.

The shallow aquifer water table contour map indicates that the general horizontal groundwater flow direction is from east to west across the site toward the Red Cedar River as presented on **Figure 10**. The calculated horizontal hydraulic gradient calculated along the depicted groundwater flow line east of the river is about 0.08 ft/ft. This horizontal hydraulic gradient, in conjunction with a hydraulic conductivity geometric mean of $1.1\text{x}10^{-3}$ cm/sec, results in an average linear groundwater flow velocity of 0.09 feet per day. Shallow groundwater flow west of the Red Cedar River is also toward the river. The calculated horizontal hydraulic gradient calculated along the depicted groundwater flow line west of the river is about 0.007 ft/ft. This horizontal hydraulic gradient, in conjunction with a hydraulic conductivity geometric mean of $1.1\text{x}10^{-3}$ cm/sec, results in an average linear groundwater flow velocity of 0.07 feet per day.

The bedrock groundwater pieziometric contour map indicates that the horizontal groundwater flow direction is generally east to west across the site toward the Red Cedar River. The calculated horizontal hydraulic gradient calculated along the groundwater flow line east of the river is depicted on **Figure 15** is 0.009 ft/ft. This horizontal hydraulic gradient, in conjunction with a hydraulic conductivity geometric mean of $4.8\text{x}10^{-4}$ cm/sec, results in an

average linear groundwater flow velocity of 0.06 feet per day in the bedrock. Bedrock groundwater flow west of the Red Cedar River flows to the east toward the river. The calculated horizontal hydraulic gradient calculated along the depicted groundwater flow line west of the river is about 0.005 ft/ft. This horizontal hydraulic gradient, in conjunction with a hydraulic conductivity geometric mean of 4.8×10^{-4} cm/sec, results in an average linear groundwater flow velocity of 0.03 feet per day.

To evaluate the potential for the vertical migration of groundwater contaminants, vertical hydraulic gradients were determined from groundwater level measurements at well nest locations where shallow and deep wells were located in close proximity. A downward component of flow from the shallow aquifer to the bedrock aquifer was measured at well nest locations primarily east of the river, while an upward component to flow was measured primarily at locations west of the on-site pond and at locations west of the river in the lowland/floodplain corridor. The distribution of the vertical hydraulic gradients, both upward and downward, is presented on **Figure 16**. As shown on Figure 16, upward vertical gradients ranging from 0.03 ft/ft to 0.002 ft/ft. are present adjacent to the Red Cedar River and within the lowland/floodplain corridor. Upward groundwater flow gradients were also measured at well nest MW-03/MW-03C on the east margin of the site, MW-09/MW-09C in the center of the site, and MW-28/MW-28C off-site to the east. These gradients are possibly due to the presence of the upper shallow aquifer being under confined conditions in these areas. The downward hydraulic gradients measured on the site and east of the river ranged from 0.002 ft/ft (very low) to 0.04 ft/ft. The vertical hydraulic gradient data is consistent with flow within a local discharge area and indicates that groundwater flow from the surrounding uplands to the east and west of the river discharges into the river. The data also suggests a possible correlation with the bedrock surface topography, as all of the downward gradients are present at locations where the bedrock surface is lower than 850 feet msl, except for the new off-site well MW-29/MW-29C to the west.

To evaluate the interaction of the groundwater flow regime with the Red Cedar River, horizontal and vertical groundwater flow data have been integrated into a groundwater flow net. The groundwater flow net, super-imposed on hydrostratigraphic cross A – A' and presented on **Figure 17**, is oriented parallel to the groundwater flow direction and extends across the site and the Red Cedar River Lowland/floodplain to the MW-27 and 27C well cluster. The flow net depicts the transition of the flow of groundwater from a predominantly horizontal direction on the east and west sides of the river to an increasingly upward flow in the Red Cedar River lowland/floodplain. The vertical hydraulic gradient calculations and associated groundwater monitoring well nest water level measurements are provided in **Appendix D**.

On-site and off-site groundwater samples were collected during 2003 before and after the massive soil excavation was completed. A baseline monitoring well sampling event was completed in March 2003 prior to excavation activities. Following the completion of the soil removal, one round of groundwater sampling was conducted in September-October 2003. A second post-excavation round of sampling was conducted newly installed wells in early November 2003 (previously installed wells were not re-sampled). The last monitoring wells (MW-21, MW-27 cluster, MW-28 cluster, and the MW-29 cluster, see **Figure 3**) were installed in December 2003 were sampled in late December 2003 and early January 2004.

The horizontal and vertical extents of groundwater contaminants (those detected above applicable criteria) in groundwater (VOCs, metals, and free cyanide) are presented on **Figures 18 through 22**. The isoconcentration contours illustrated on these figures depict the September-October 2003 contaminant concentrations detected in samples from monitoring wells screened within the shallow aquifer. These figures also show detected concentrations from intermediate and deep monitoring well samples. As shown on the isoconcentration maps, groundwater contamination predominates within the shallow aquifer versus the bedrock aquifer. Contaminants detected during September-October 2003 at concentrations above applicable Part 201 Criteria in intermediate or bedrock well samples are limited to four wells located near the Red Cedar River. Contaminants include vinyl chloride at well B-2 (38 ug/l), cyanide at wells E-2 (0.006 mg/l) and A-2 (0.007 mg/l) and cadmium (0.0086 mg/l total, 0.013 dissolved) and lead (0.0087 mg/l) at well J-2.

In summary, the evaluation of the hydrostratigraphic cross-sections, potentiometric surface maps, and groundwater quality data tables and figures to assess groundwater flow and transport conditions demonstrates the stability of the current groundwater contamination area. Following the extensive soil contaminant source excavation and removal from the site, most of the detected groundwater contaminants (VOCs, metals, and cyanide) that exceed GSI Criteria and all of the off-site contaminants that exceed Drinking Water Criteria, occur in the shallow aquifer. Therefore, based on groundwater discharge to the Red Cedar River, the aquitard underlying the shallow aquifer, the close proximity of the contaminated groundwater to the discharge area, and the successful removal of contaminant source

materials across the site, contaminated groundwater is expected to remain within the current horizontal and vertical dimensions of the existing area of groundwater contamination.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

__X__ If yes - continue after identifying potentially affected surface water bodies.

______ If no - skip to #7 (and enter a "YE" status code in #8, if #7=yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

______ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s):

The site is located on the eastern bank of the Red Cedar River. Impacted groundwater from the site discharges to the Red Cedar River.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

__X__ If yes,-skip to #7 (and enter "YE" status code in #8 if #7=yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no, (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s),"and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and
Reference(s):

The discharge of contaminated groundwater into surface water is not insignificant due to two detections of vinyl chloride at concentrations greater than *10 times their appropriate groundwater "level"*, which for this project is MDEQ Part 201 GSI criteria.

The detected concentration of vinyl chloride in the October 2003 MWB-1 sample was 250 ug/L, and the vinyl chloride detection in the November 2003 MW-17 sample was 330 ug/L (**Figure 23**). These shallow wells are near the Red Cedar River and therefore represent the worst-case discharge of vinyl chloride. ~~The detected concentrations are more than 10 times the GSI criterion for vinyl chloride (10 times the GSI criterion of 15 ug/L is 150 ug/L).~~ The detected vinyl chloride concentrations are significantly less than 100 times the GSI criterion (the actual ratio is 22 times GSI for MW-17), so the mass loading of vinyl chloride ~~does not~~ need to be determined, as specified in Question 5.

No other groundwater constituents have been observed at concentrations greater than 10 times the GSI criteria in samples from wells located near the river (in eastern on-site wells MW-01, MW-02, and MW-5 TCE levels are elevated but are representative of plume conditions at the groundwater surface water interface).

[3]As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be **"currently acceptable"** (i.e., not cause impacts to surface water, sediments, or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

__X__ If yes - continue and either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-system), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment[5], appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

______ If no - (the discharge of "contaminated" groundwater cannot be shown to be **"currently acceptable"**) - skip to #8 and enter the "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

______ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The discharge of "contaminated" groundwater into surface water is "currently acceptable". The acceptability of the discharge is demonstrated below by means of a groundwater-surface water mixing calculation and a comparison of the calculated surface water concentration to applicable surface water protection criteria.

Areas Of Groundwater Discharge Associated With Current Exceedances In Groundwater

The cross sectional area for VOCs discharging to surface water (A_{VOC}) is determined by the maximum thickness of the shallow aquifer nearest the surface water body and the total distance across well areas associated with VOC discharges. An 8-foot vertical profile is a conservative measure since that value is the maximum on-site and is expected to exceed the thickness of the shallow aquifer across most of the discharge area. A 450-foot horizontal distance is a conservative measure since that value is based on the entire VOC plume front nearest the Red Cedar River and the drainage ditch south of the railroad tracks (from north of MW-26 to south of MW-14).

$A_{VOC} = 450\text{ft} \times 8\text{ ft} = 3{,}600\text{ ft}^2$

MDEQ Flow Measurements And Prescribed Low Flow Discharge (Q_{SW}) For The Red Cedar River

The MDEQ completes mixing zone determinations using conservatively derived stream flow values representing a 90-day once in 10-year flow (90Q10). The mean harmonic flow value for the Red Cedar River based on MDEQ measurements taken at the site boundary is 12 cfs. The MDEQ 90Q10 value is 3.8 cfs.

$(Q_{SW}) = (3.8\text{ ft}^2/\text{sec})(86{,}400\text{ sec/day}) = 328{,}320\text{ ft}^3/\text{day}$

Average Value Of Horizontal Hydraulic Gradient For The Shallow Aquifer (i)

i = 0.02 ft/ft (double the actual gradient measured from MW-09 to MW-17)

$330 \cdot \frac{20\%}{328\ 320} = 2.03$ @ 900 ft wide slope.

Hydraulic Conductivity (K) From RFI Permeability Tests

K = 14 ft/day (highest RFI permeability test result)

Calculated Groundwater Flux (Q_{gw})

$Q_{gw} = (K)\,(i)\,(A)$

$Q_{gw} = (14 \text{ ft/day})\,(0.02 \text{ ft/ft})\,(3{,}600 \text{ ft}^2) = 1{,}008 \text{ ft}^3\text{/day}$ 2016.

Estimated Surface Water Concentrations (C_{sw}) After Discharge and Comparison To GSI Criteria

Concentrations in surface water = maximum plume concentration times the mixing zone dilution factor (Q_{gw}/Q_{sw}):

$C_{sw} = (C_{gw})\,(Q_{gw}/Q_{sw})$

call MI ! comparing 2 diff criteria 201 + 750!

Parameter Above 10X GSI Criteria	Maximum Concentration Nearest Red Cedar River (C_{gw})	Estimated Concentration Based on Mixing with 90Q10 Surface Water Flow (C_{sw})	MDEQ Part 201 Generic GSI Criteria	Mixing Zone Dilution Ratio (Q_{sw}/Q_{gw})
Vinyl Chloride	330 ppb	1.01 ppb	15 ppb	325:1

Therefore, the discharge of groundwater into the Red Cedar River is acceptable within the context of this EI determination. As cited in the response to Question 5, no other groundwater constituents exceeded 10 times their GSI criteria. The application of the mixing zone dilution factor (Q_{gw}/Q_{sw}) to all other detected groundwater constituents would show that all concentrations decrease to levels even further below their appropriate criteria.

Several additional factors regarding vinyl chloride impacts to surface are noteworthy:

- The vinyl chloride GSI criterion exceedances are largely based on conservative, human health risk based calculations. The detected concentrations are much lower than values protective of aquatic life and wildlife. The Red Cedar River is not a drinking water source.
- The two detections of vinyl chloride that exceeded 10 times the GSI criterion are not representative of the entire discharge of groundwater from the site to the river over the 30-year exposure period assumed in the development of the GSI criterion.
- Vinyl chloride was not detected in any surface water or sediment samples during 2003.
- Vinyl chloride is not expected to persist long in surface water.

Basis for GSI Criterion and Potentially Significant Exposures

GSI criteria are based on protection of human health, wildlife and aquatic life. The criterion for vinyl chloride assumes non-drinking water exposures. The vinyl chloride concentration in MWB-1 and MW-17 are much less than values for protection of wildlife and aquatic life (*Rule 57 Water Quality Values*, MDEQ, Surface Water Quality Assessment Section). Therefore, the potential significance of the vinyl chloride is related to human health, not to ecological resources and the discharge of "contaminated" groundwater to the river is currently acceptable in relation to impacts on wildlife and aquatic life.

The Red Cedar River is a tributary to the Grand River, which flows into Lake Michigan. Neither the Red Cedar River nor the Grand River is used as a public drinking water source (*Public Water Supply Intakes in Michigan*, MDEQ). Fowlerville obtains municipal water from groundwater, not from surface water (*Michigan Community*

Public Water Supplies, MDEQ). GSI Criteria for non-drinking water is appropriate because the Red Cedar River is not used as a public drinking water source.

This portion of the Red Cedar River may infrequently be a used for swimming or other exposures involving whole body contact. Total body contact, fish ingestion, and incidental ingestion of water are assumed in development of GSI Criteria. No constituents were detected in the river at concentrations above GSI Criteria, so total body contact, fish ingestion, and incidental ingestion of river water exposures are currently acceptable in relation to the current discharge of vinyl chloride to the river from the site (this analysis does not apply to sediments that reflect past inputs of persistent chemicals).

Representativeness of the Data

Concentrations of vinyl chloride in groundwater exceed 10 times the GSI criterion in only two of the 20 wells located along the river (**Figure 23**). Therefore, this single location exhibiting an elevated vinyl chloride concentration is not representative of the entire discharge area. The discharge area with groundwater concentrations of vinyl chloride in exceedance of 10 times the GSI criterion is relatively small compared to the total discharge area of the site to the river.

The GSI criterion is based on carcinogenicity, and assumes 30 years of exposure over a 70-year lifetime. The current concentrations are not representative of the 30-year exposure concentration. Concentrations will generally decline over 30 years because the massive excavation of contaminated soil in 2003 effectively removed the most significant continuing source area of chlorinated solvents to shallow groundwater at the site. In addition, groundwater remediation activities may be implemented in the future, if necessary, should increased concentrations, newly identified GSI exceedances, or plume rebound effects be identified during the groundwater monitoring program.

Presence of Vinyl Chloride in Surface Water and Sediments

Vinyl chloride was not detected in any surface water samples from the river including samples collected near wells MWB-1 and MW-17. This indicates vinyl chloride is rapidly attenuated from the surface water and/or the loads to the river from impacted groundwater are too low to cause detectable concentrations in the river.

Vinyl chloride was not detected in sediments during 2003. Some of the sediment samples were collected very close to MWB-1 and MW-17, the only wells with vinyl chloride greater than 10 times the GSI criterion. It should be noted that one very low concentration of vinyl chloride (0.013 mg/Kg) was detected in one sediment sample (SE/RC-10/1) out of approximately 100 sediment samples collected in 1994 and reported in the RFI Report. The absence of detectable concentrations of vinyl chloride in sediments indicates vinyl chloride is rapidly lost from the sediments and/or the loads to the sediments from impacted groundwater are too low to cause detectable concentrations in sediments. The discharge of "contaminated" groundwater into surface water is currently acceptable in part because vinyl chloride was not detected in surface water or sediments.

Persistence of Vinyl Chloride in Surface Water

Vinyl chloride is not expected to persist long in surface water. Vinyl chloride volatilizes rapidly from surface water with a half-life of approximately 0.8 hours. It is also subject to photo-degradation and does not bio-accumulate (Handbook of the Environmental Fate and Exposure Data for Organic Chemicals by Philip Howard, 1989).

[4]Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5]The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring**/measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_______ If no, enter a "NO" status code in #8.

_______ If unknown - enter an "IN" status code in #8.

Rationale and
Reference(s):

Groundwater monitoring/measurement data will be collected in the future to verify that contaminated groundwater has remained within the horizontal and vertical dimensions of the existing area. Future groundwater sampling will be conducted both on-site and off-site to confirm the findings of the 2003 groundwater study and to further characterize the nature and extent of groundwater contamination over time. Long-term groundwater sampling will also allow the assessment of anticipated beneficial effects resulting directly from the massive removal of the contaminated soil from the site during 2003. A groundwater monitoring program will be established to monitor the existing contaminated groundwater area.

Future groundwater sampling will be conducted on a semi-annual basis for the next two-year period. Groundwater sample analyses will include metals, cyanide, polychlorinated biphenyls, semi-volatile organic compounds, and VOCs on selected well samples. Following the two-year sampling period, the frequency of sampling and parameters selected for analysis will be re-evaluated based on an assessment of past water quality data.

Groundwater level measurements will be conducted for the next two-year period on a semi-annual basis. The groundwater level measurements will be evaluated and groundwater flow direction confirmed to verify that contaminated groundwater flow paths remain within the horizontal and vertical dimensions of the existing area of contaminated groundwater.

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

___X__YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Former Stanley Too facility, EPA ID# MID099124299, located at 425 Frank Street, Fowlerville, Michigan. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater." This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_______ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_______IN - More information is needed to make a determination.

Completed by (signature)____________________ Date________________
(print)____________________
(title)____________________

Supervisor (signature)____________________ Date________________
(print)____________________
(title)____________________
(EPA Region or State)____________________

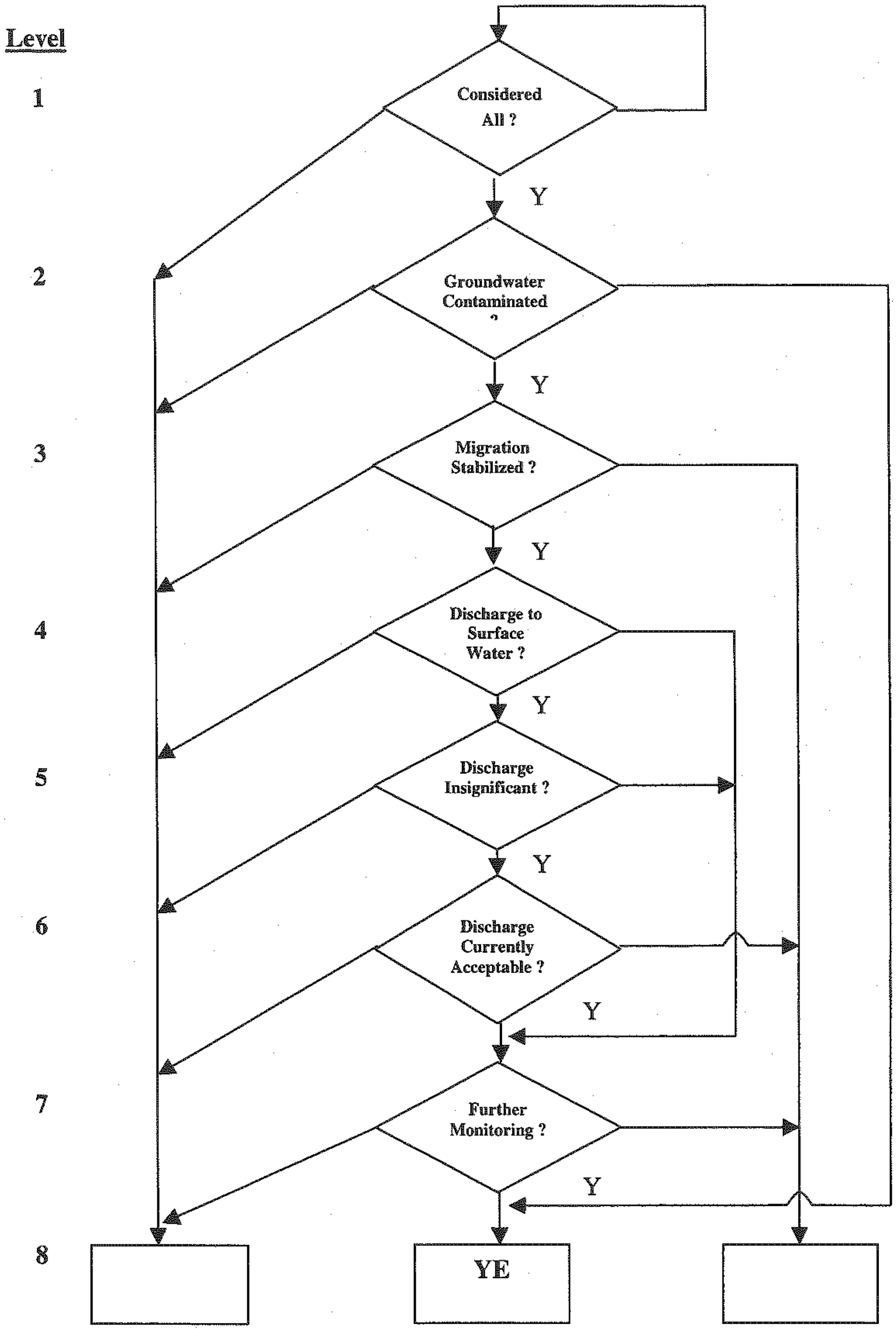
Locations where References may be found:

Contact telephone and e-mail numbers:

(name)____________________
(phone #)____________________
(e-mail)____________________

Facility Name Johnson Controls
EPA ID# MID-099-124-299
City/State Fowlerville, Michigan

MIGRATION OF CONTAMINATED GROUDWATER UNDER CONTROL (CA 750)



GROUNDWATER ENVIRONMENTAL INDICATORS SUPPORT DOCUMENT FORMER STANLEY TOOLS FOWLERVILLE, MICHIGAN

Prepared for:

Johnson Controls, Inc
Plymouth, Michigan

Prepared by:

Earth Tech -Weston, Inc.
36133 Schoolcraft Road
Livonia, Michigan 48150

and

Weston Solutions of Michigan, Inc
Suite 100
2501 Jolly Road
Okemos, MI 48864

February 3, 2004

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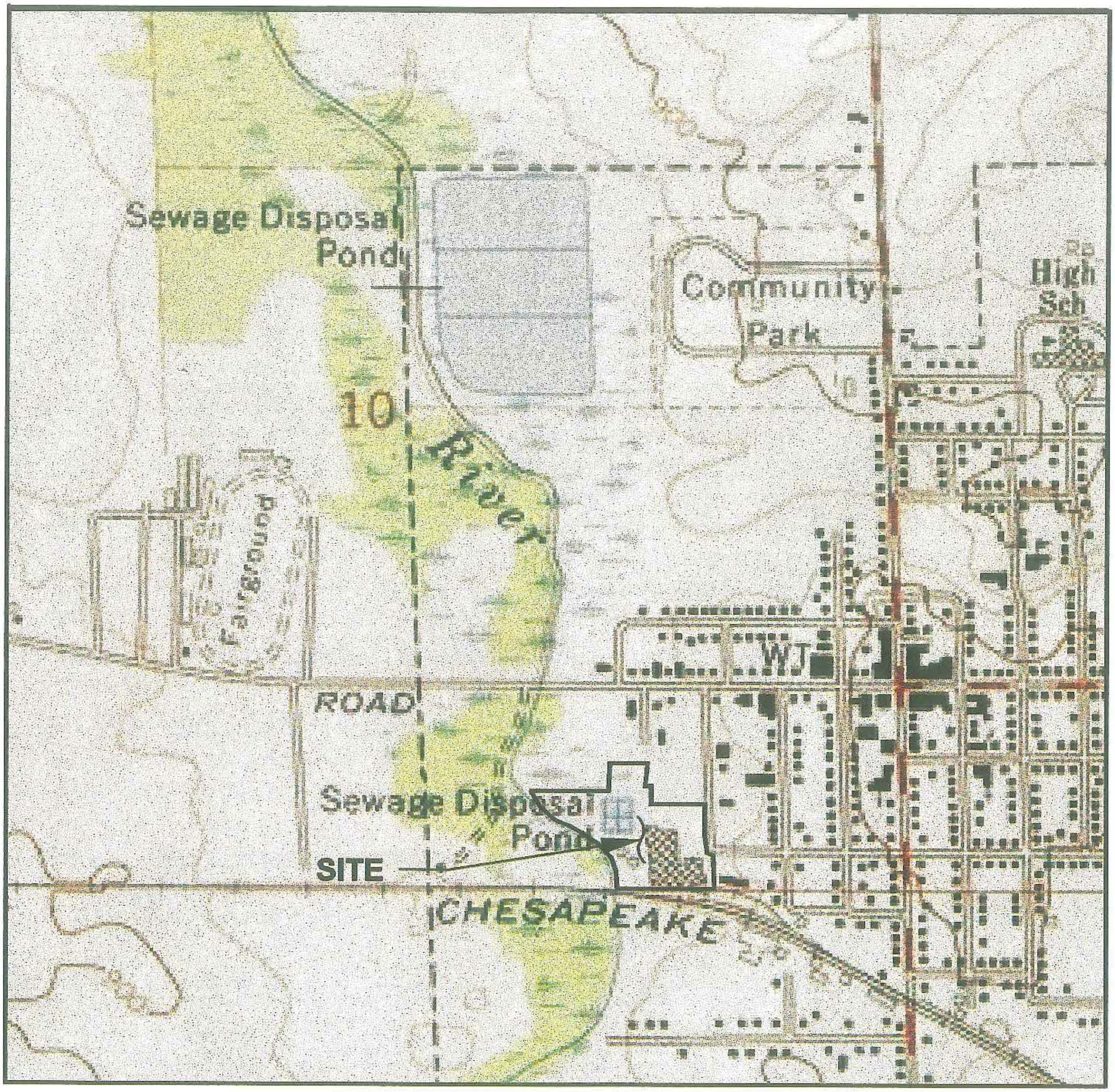


SOURCE:

TOPO MAP FROM "MICHIGAN.TPO AND "UNTITLED.TPG DATED 10/01/03

WESTON SOLUTIONS

EARTH TECH

APPROXIMATE SCALE: 1" = 1000'

FIGURE 1
SITE LOCATION MAP

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

NOVEMBER 2003

65468

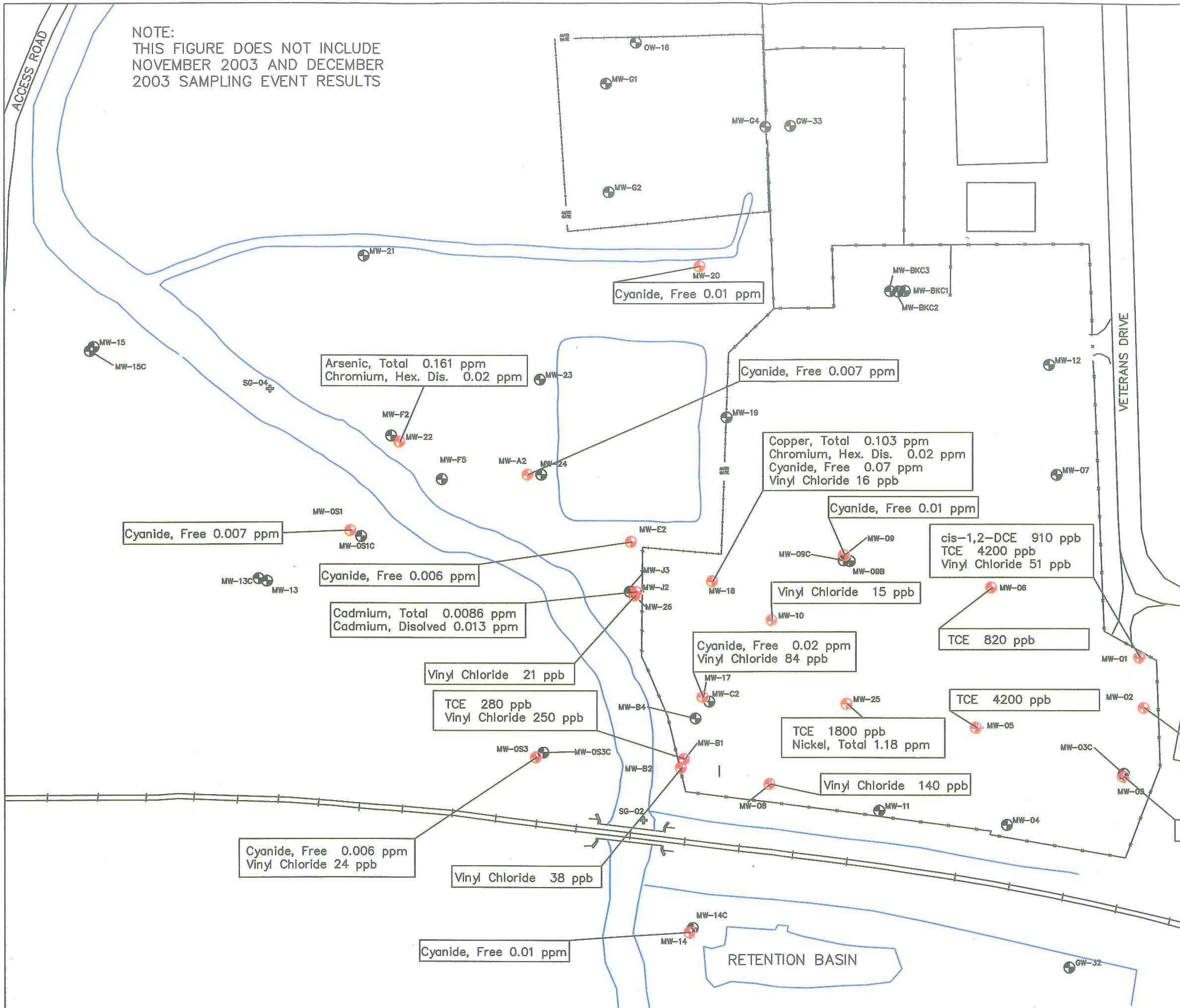


FIGURE 2

ON-SITE AND OFF-SITE GROUNDWATER MONITORING WELLS EXCEEDING THE GSI CRITERIA

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

NOVEMBER 2003

65468

EARTH TECH

WESTON SOLUTIONS

LEGEND

– MONITORING WELLS WITH RESULTS EXCEEDING GSI CRITERIA

RELEVANT GSI CRITERIA

VOCs
cis–1,2–DCE 620 ppb
TCE 200 ppb
Vinyl Chloride 15 ppb

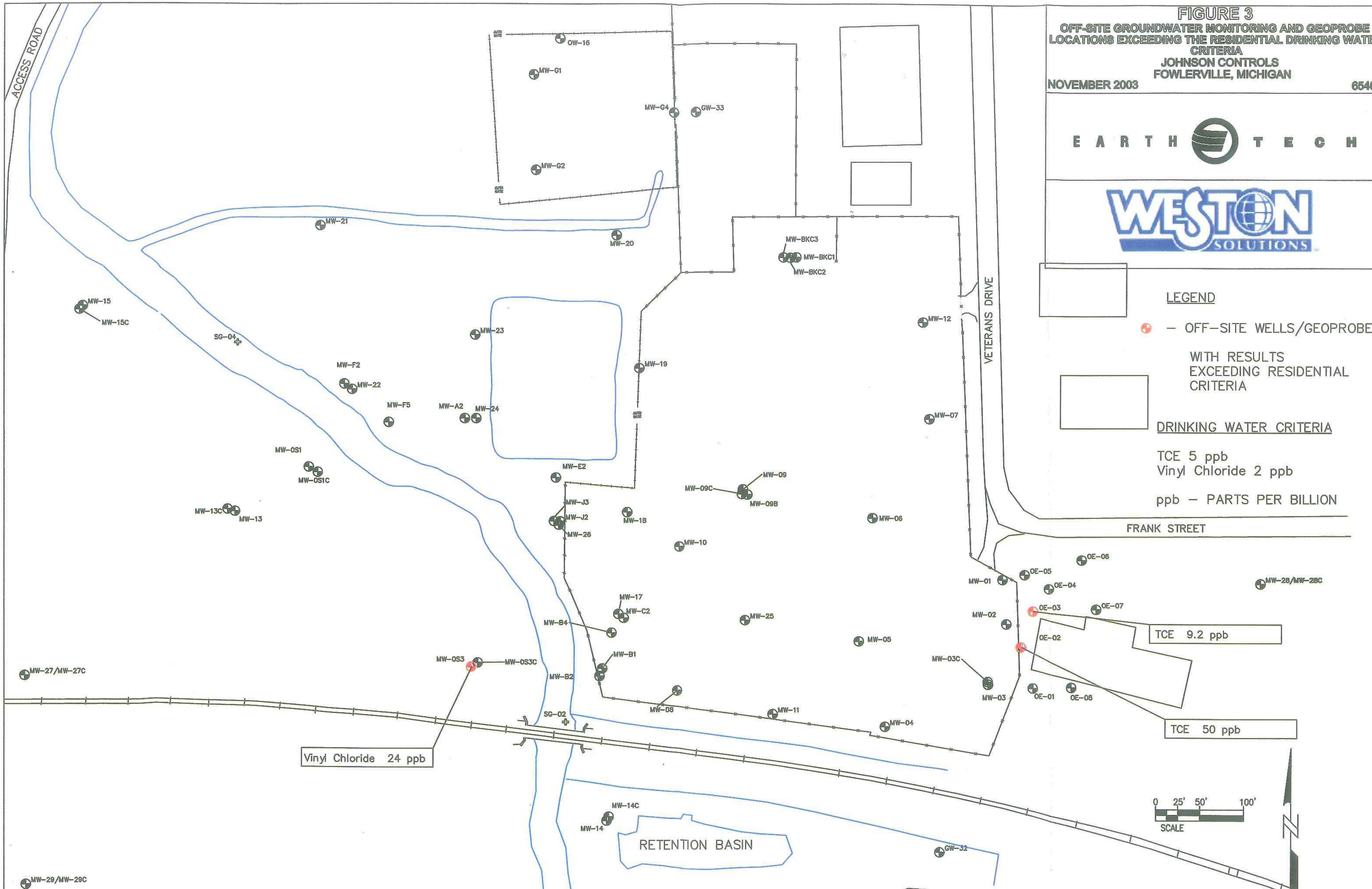
Total Metals
Arsenic 0.15 ppm
Cadmium 0.0062 ppm
Copper 0.029 ppm
Nickel 0.17 ppm

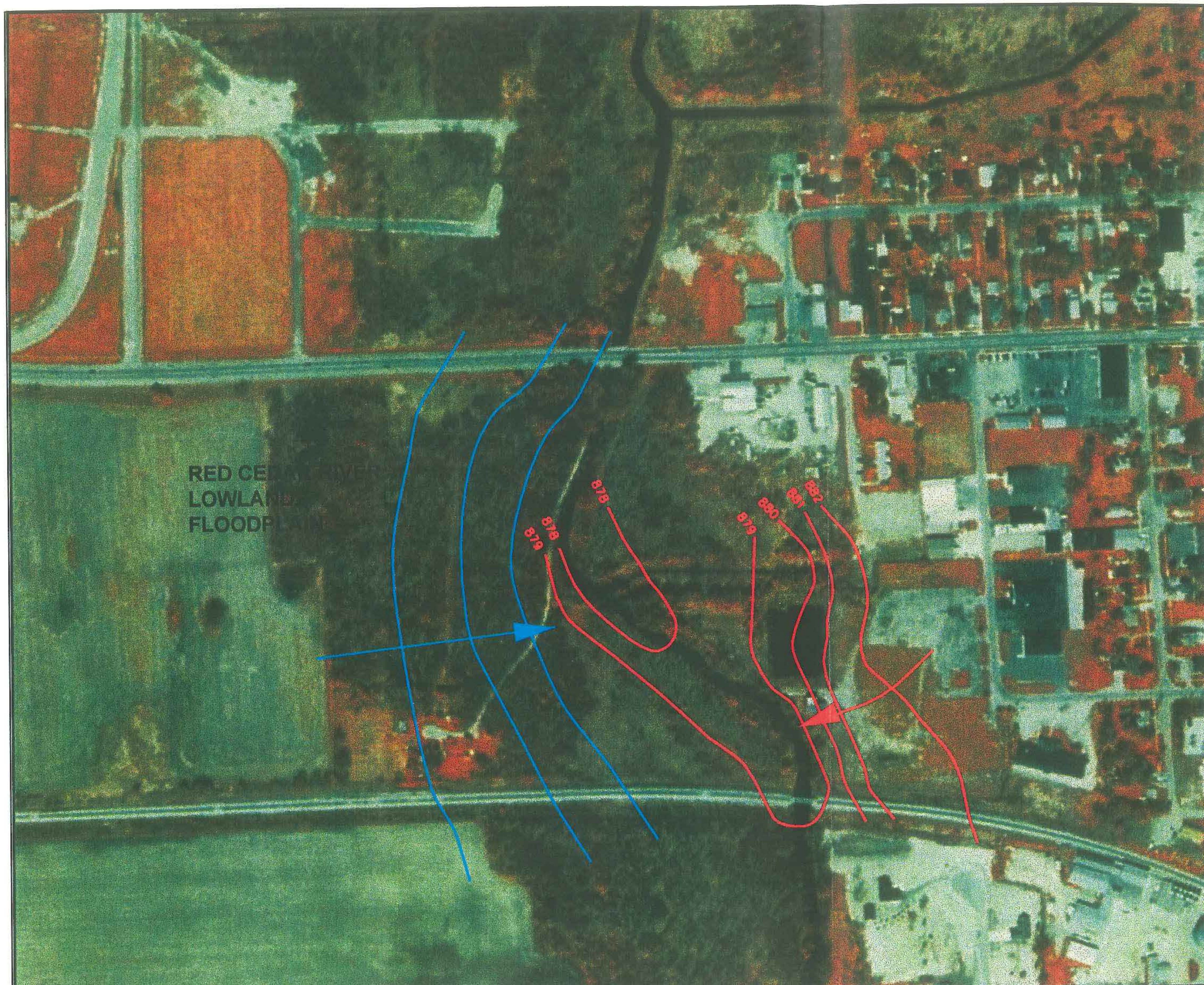
Dissolved Metals
Cadmium 0.0062 ppm
Chromium, Hexavalent 0.011 ppm

Other
Cyanide, Free 0.0052 ppm

ppb – PARTS PER BILLION
ppm – PARTS PER MILLION

FIGURE 3
OFF-SITE GROUNDWATER MONITORING AND GEOPROBE LOCATIONS EXCEEDING THE RESIDENTIAL DRINKING WATER CRITERIA
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
NOVEMBER 2003
65468





LEGEND:

SITE CONTOURS

ESTIMTED OFFSITE CONTOURS

GROUNDWATER FLOW DIRECTION

NOTE:

CONTOURS ON EAST SIDE OF RED CEDAR RIVER REFLECT ACTUAL GROUNDWATER BASED ON GROUNDWATER MONITORING WELL MEASUREMENTS.

SOURCE:

USGS 1998

APPROXIMATE SCALE: 1" = 1000'

WESTON SOLUTIONS

EARTH TECH

FIGURE 4
CONCEPTUAL GROUNDWATER FLOW REGIME

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

NOVEMBER 2003

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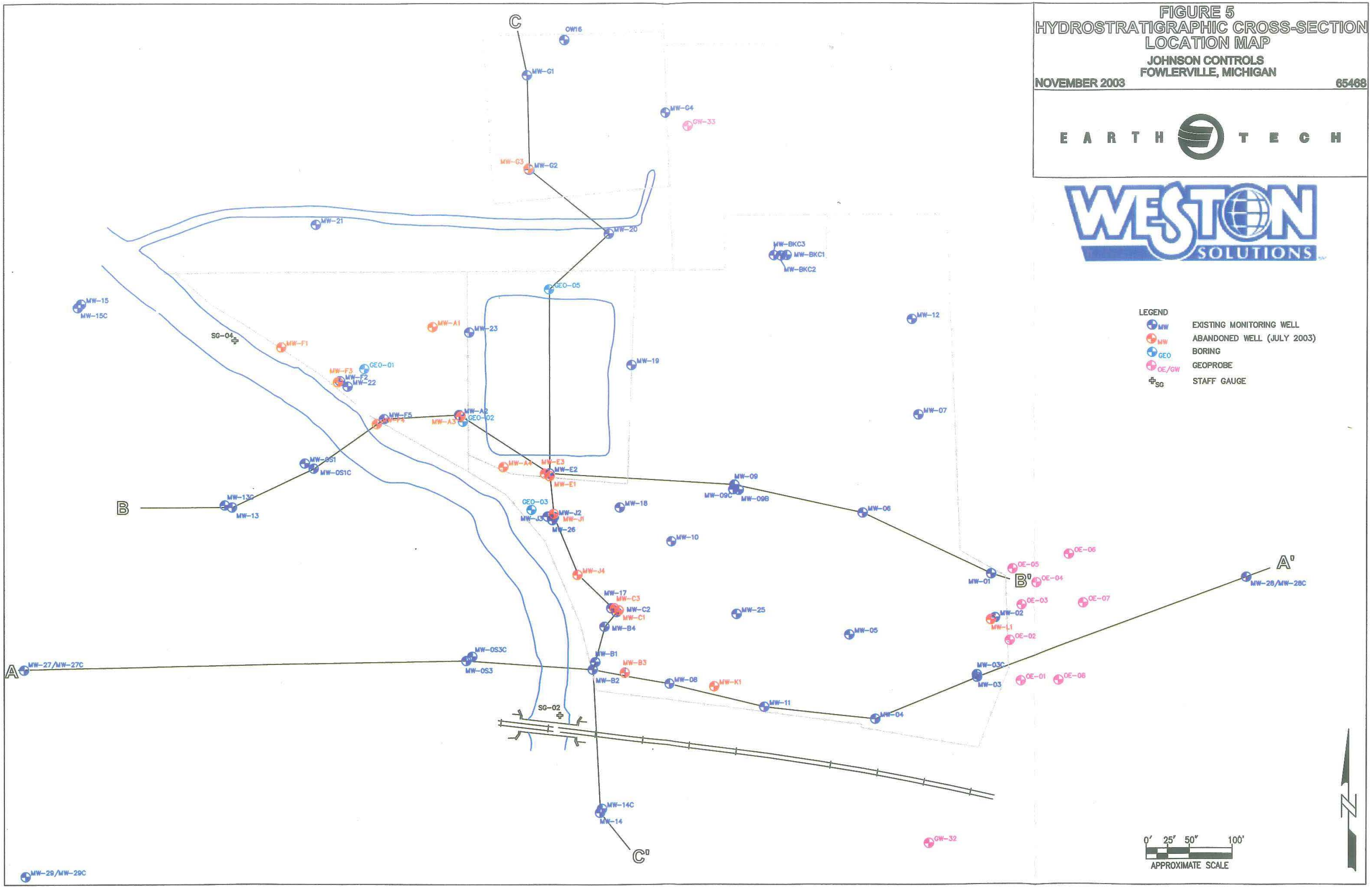
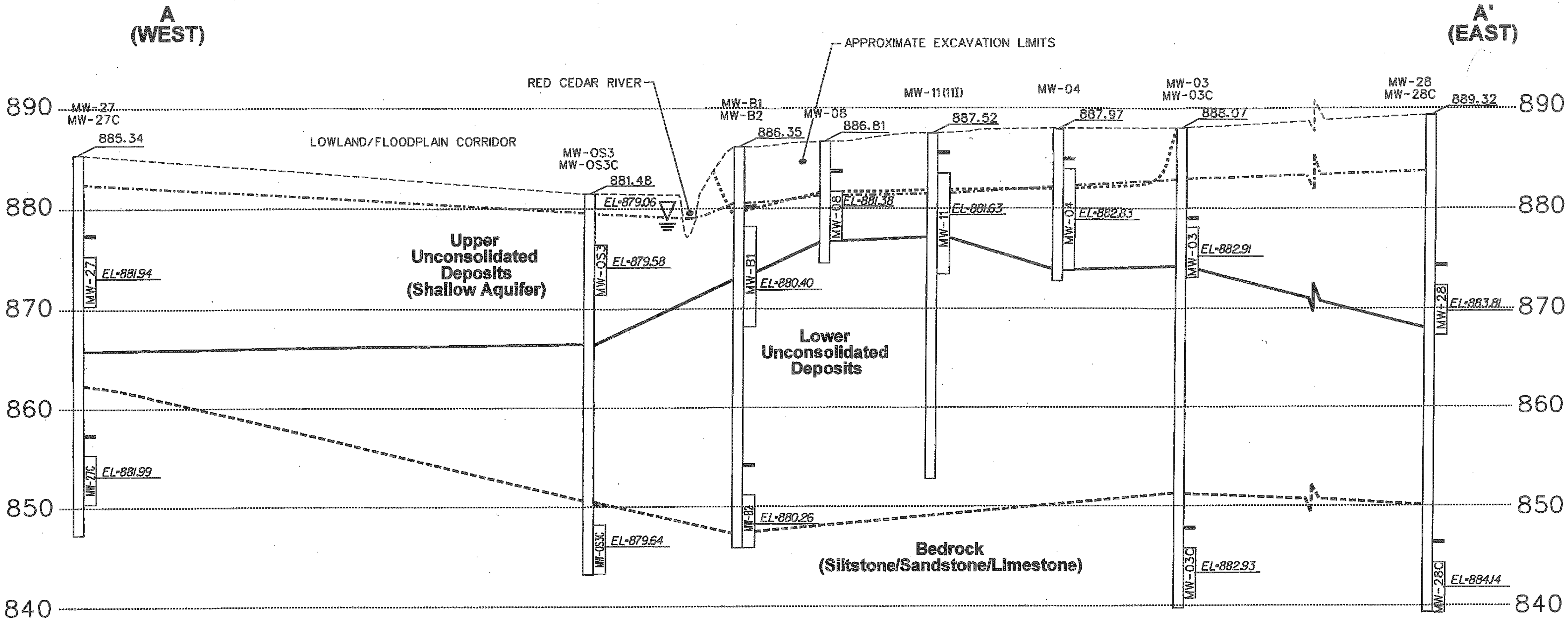
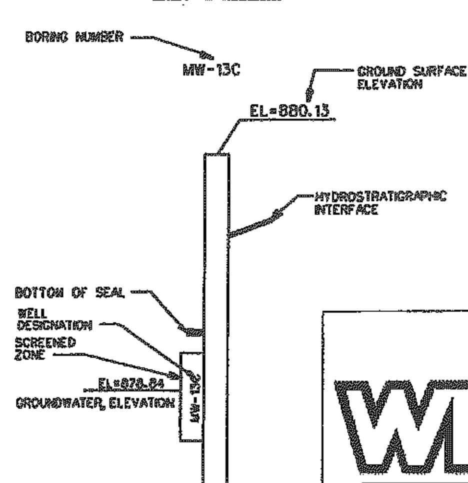


FIGURE 5
HYDROSTRATIGRAPHIC CROSS-SECTION
LOCATION MAP
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
NOVEMBER 2003
65468
EARTH TECH
WESTON SOLUTIONS
LEGEND
MW EXISTING MONITORING WELL
MW ABANDONED WELL (JULY 2003)
GEO BORING
OE/GW GEOPROBE
SG STAFF GAUGE
0' 25' 50' 100'
APPROXIMATE SCALE
A
A'
B
B'
C
C'
MW-27/MW-27C
MW-29/MW-29C
MW-28/MW-28C
MW-15
MW-15C
SG-04
SG-02
MW-F1
MW-A1
MW-23
MW-21
MW-20
MW-G1
MW-G2
MW-G3
MW-G4
GW-33
GW-32
OW16
GEO-05
GEO-01
GEO-02
GEO-03
MW-BKC3
MW-BKC1
MW-BKC2
MW-12
MW-19
MW-07
MW-F3
MW-F2
MW-22
MW-F5
MW-F4
MW-A2
MW-A3
MW-A4
MW-E3
MW-E2
MW-E1
MW-OS1
MW-OS1C
MW-13C
MW-13
MW-09
MW-09C
MW-09B
MW-18
MW-J2
MW-J1
MW-J3
MW-26
MW-10
MW-06
MW-01
MW-J4
MW-17
MW-C3
MW-C2
MW-C1
MW-B4
MW-25
MW-05
MW-02
MW-L1
MW-OS3C
MW-OS3
MW-B1
MW-B2
MW-B3
MW-08
MW-K1
MW-11
MW-04
MW-03C
MW-03
MW-14C
MW-14
OE-01
OE-02
OE-03
OE-04
OE-05
OE-06
OE-07
OE-08



BORING LEGEND



NOTES:

1. THE DIFFERENTIATION BETWEEN UPPER AND LOWER UNCONSOLIDATED DEPOSITS WAS BASED ON FIELD DESCRIPTIONS OF BORING SAMPLES THAT WERE REPORTED ON BORING LOGS.
2. UPPER UNCONSOLIDATED DEPOSITS ARE PREDOMINANTLY SW, SP, SM SOILS THAT INCLUDE CL, ML, CL/ML, SC, GM, GP, AND PT. SOILS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). LOWER UNCONSOLIDATED DEPOSITS ARE PREDOMINANTLY CL, ML, AND CL/ML SOILS THAT INCLUDE ML/CL, GP, SW, SP, AND SM SOILS BASED ON THE USCS.
3. GROUNDWATER ELEVATIONS SHOWN ON THE CROSS SECTION WERE MEASURED DECEMBER 18, 2003.
4. ESTIMATED GRADE REPRESENTS GROUND SURFACE ELEVATIONS AT THE TIME OF DRILLING AND ARE REPRESENTATIVE OF PRE-CONSTRUCTION ELEVATIONS. FINAL GRADE REPRESENTS POST-CONSTRUCTION ELEVATIONS.

LEGEND

- CONTACT BETWEEN MAJOR HYDROSTRATIGRAPHIC UNITS
- INFERRED CONTACT
- ESTIMATED GRADE
- REMEDIAL ACTION EXCAVATION LIMITS
- WATER TABLE LEVEL

HORIZONTAL SCALE 0' 100'

VERTICAL SCALE 0' 10'

WESTON SOLUTIONS

EARTH TECH

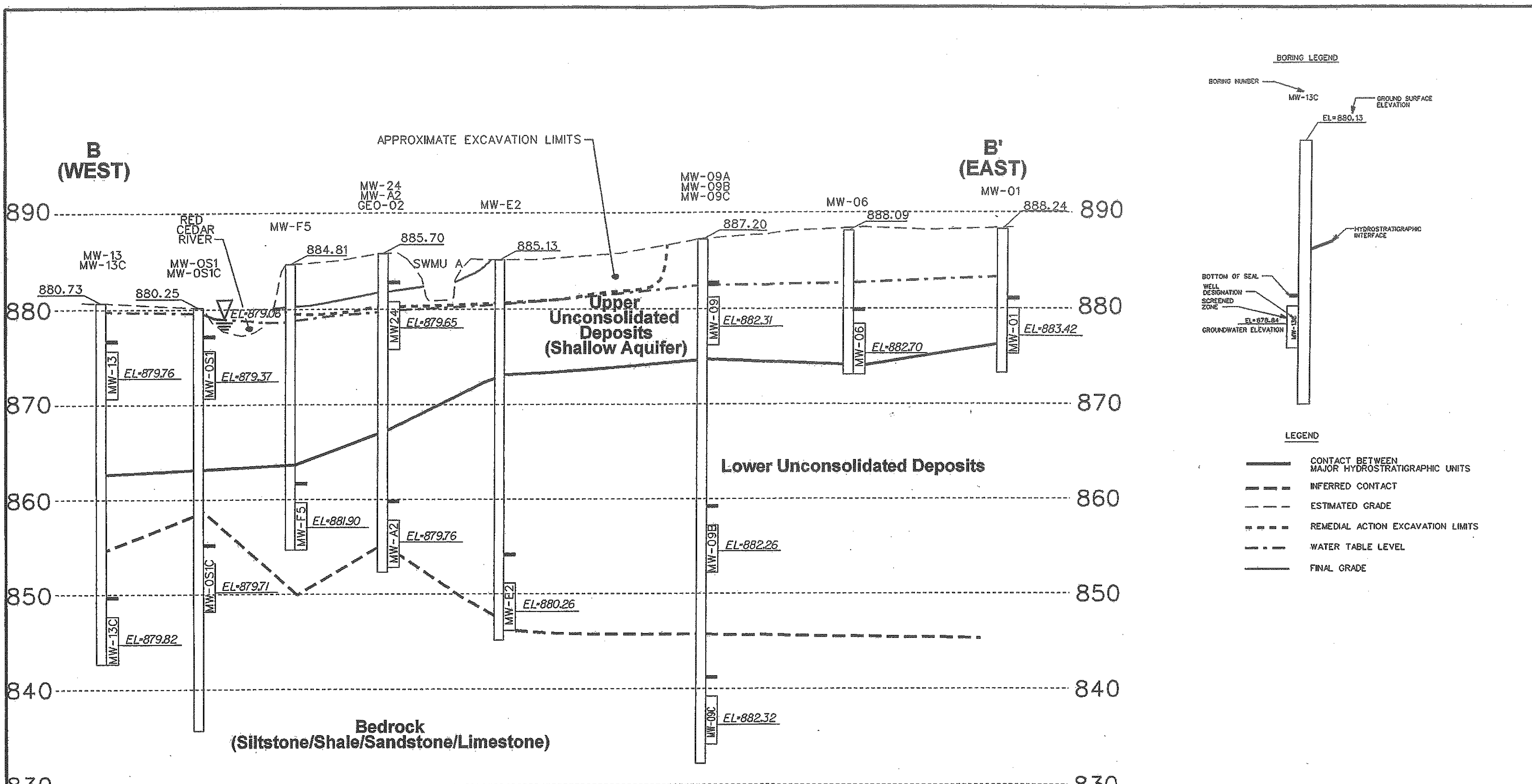
FIGURE 6

HYDROSTRATIGRAPHIC CROSS SECTION A-A'

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

FEBRUARY 2004

65468



NOTES:

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3. GROUNDWATER ELEVATIONS SHOWN ON THE CROSS SECTION WERE MEASURED DEC 18, 2003.
4. ESTIMATED GRADE REPRESENTS GROUND SURFACE ELEVATIONS AT THE TIME OF DRILLING AND ARE REPRESENTATIVE OF PRE-CONSTRUCTION ELEVATIONS. FINAL GRADE REPRESENTS POST-CONSTRUCTION ELEVATIONS.

HORIZONTAL SCALE 0' 100'
VERTICAL SCALE 0' 10'

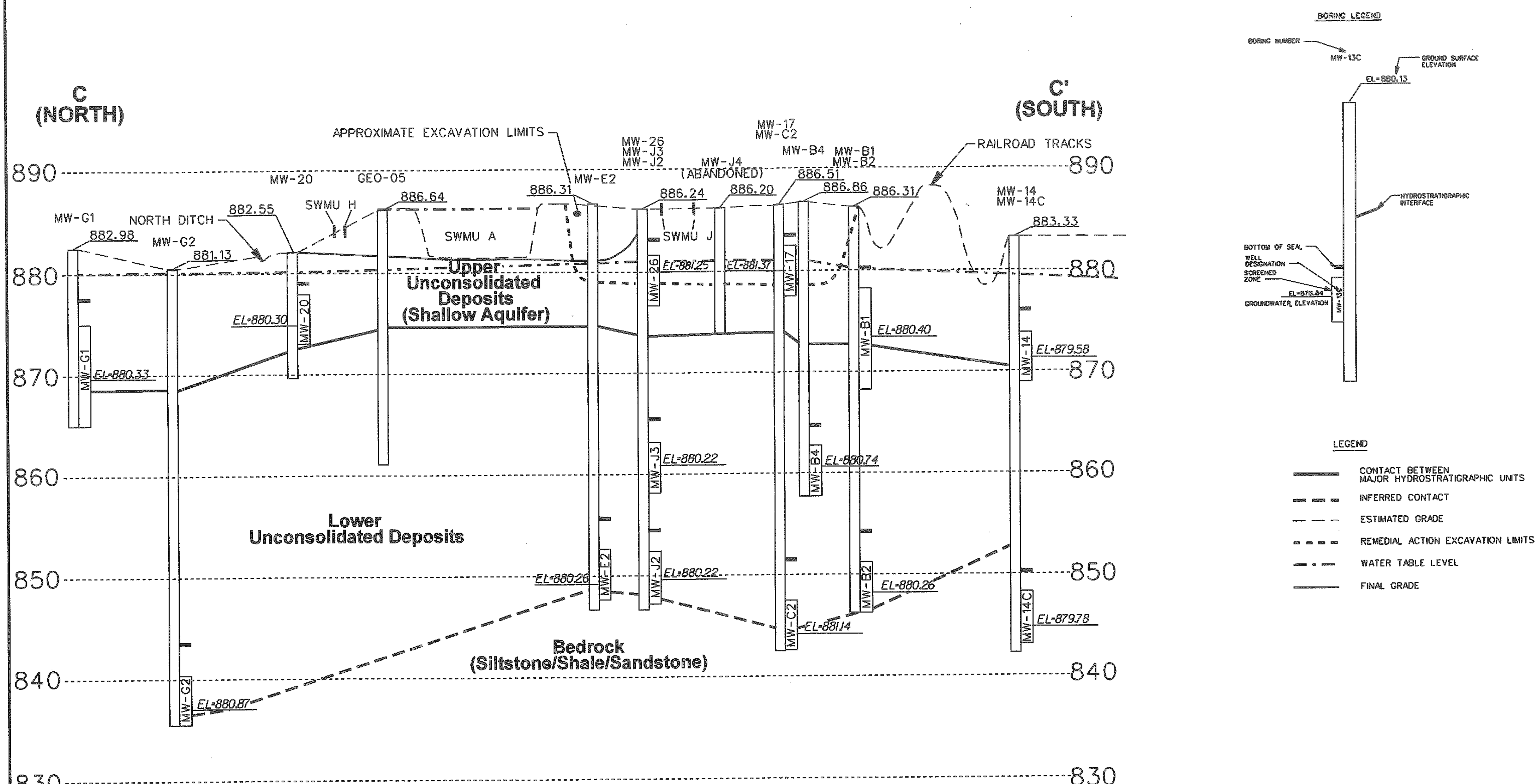
WESTON SOLUTIONS

EARTH TECH

FIGURE 7
HYDROSTRATIGRAPHIC CROSS SECTION B-B'
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

FEBRUARY 2004

65468



NOTES:

1. THE DIFFERENTIATION BETWEEN UPPER AND LOWER UNCONSOLIDATED DEPOSITS WAS BASED ON FIELD DESCRIPTIONS OF BORING SAMPLES THAT WERE REPORTED ON BORING LOGS.
2. UPPER UNCONSOLIDATED DEPOSITS ARE PREDOMINANTLY SW, SP, SM SOILS THAT INCLUDE CL, ML, CL/ML, SC, GM, GP, AND PT. SOILS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). LOWER UNCONSOLIDATED DEPOSITS ARE PREDOMINANTLY CL, ML, AND CL/ML SOILS THAT INCLUDE ML/CL, GP, SW, SP, AND SM SOILS BASED ON THE USCS.
3. GROUNDWATER ELEVATIONS SHOWN ON THE CROSS SECTION WERE MEASURED DECEMBER 18, 2003.
4. ESTIMATED GRADE REPRESENTS GROUND SURFACE ELEVATIONS AT THE TIME OF DRILLING AND ARE REPRESENTATIVE OF PRE-CONSTRUCTION ELEVATIONS. FINAL GRADE REPRESENTS POST-CONSTRUCTION ELEVATIONS.

HORIZONTAL SCALE 0' 100'

VERTICAL SCALE 0' 10'

WESTON SOLUTIONS

EARTH TECH

FIGURE 8

HYDROSTRATIGRAPHIC CROSS SECTION C-C'

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

FEBRUARY 2004

65468

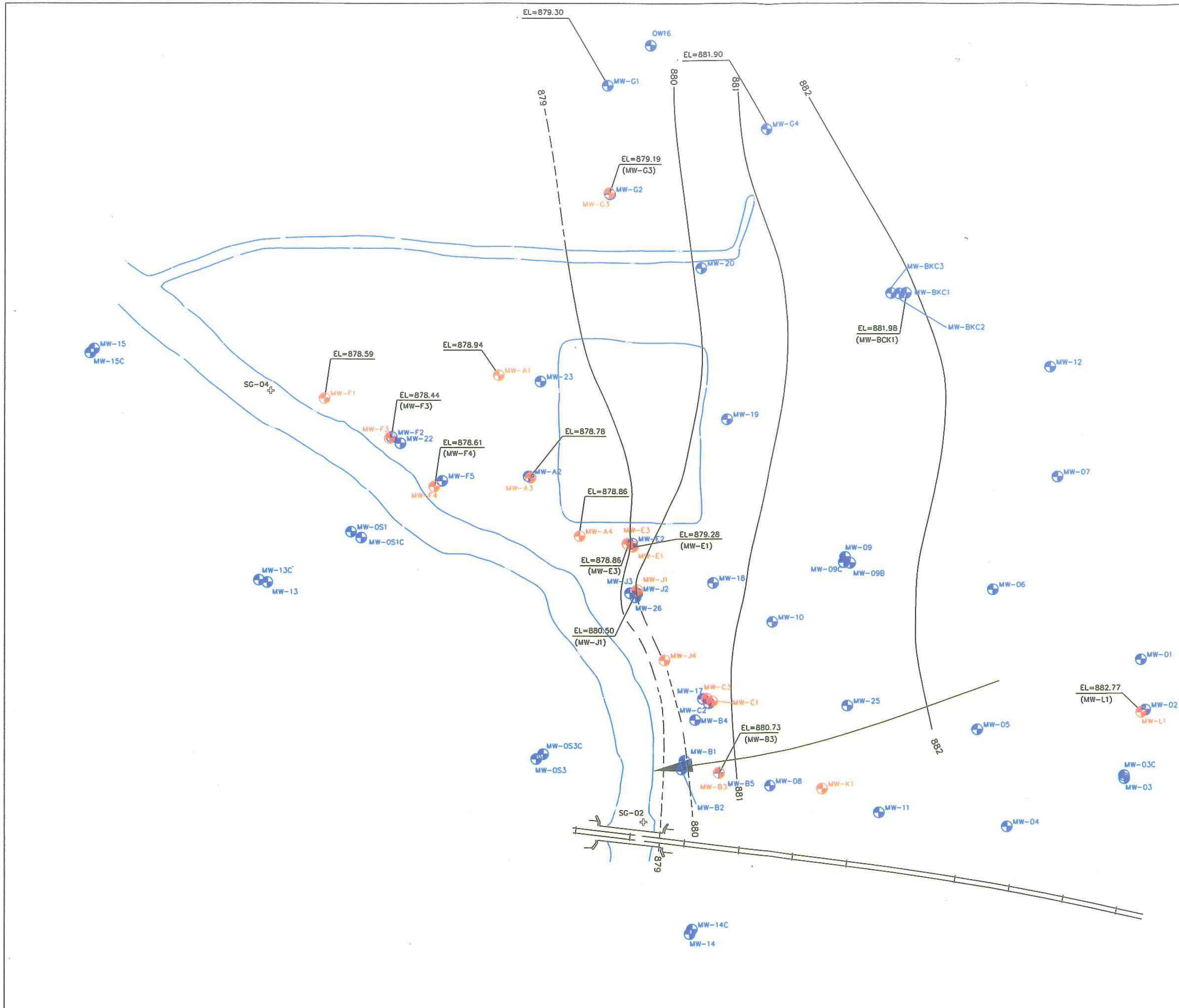


FIGURE 9
SHALLOW WELL PIEZOMETRIC CONTOUR MAP MARCH 4, 2003

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

NOVEMBER 2003 65468

EARTH TECH

WESTON SOLUTIONS

LEGEND

MW	EXISTING MONITORING WELL
MW	ABANDONED WELL (JULY 2003)
SG	STAFF GAUGE
	FLOW DIRECTION
	CONTOUR INTERVAL 1 FOOT

NOTE: WATER ELEVATION DATA FOR MONITORING WELL B-1 HAS NOT BEEN INCORPORATED INTO CONTOUR MAP DUE TO QUESTIONABLE WATER ELEVATIONS.

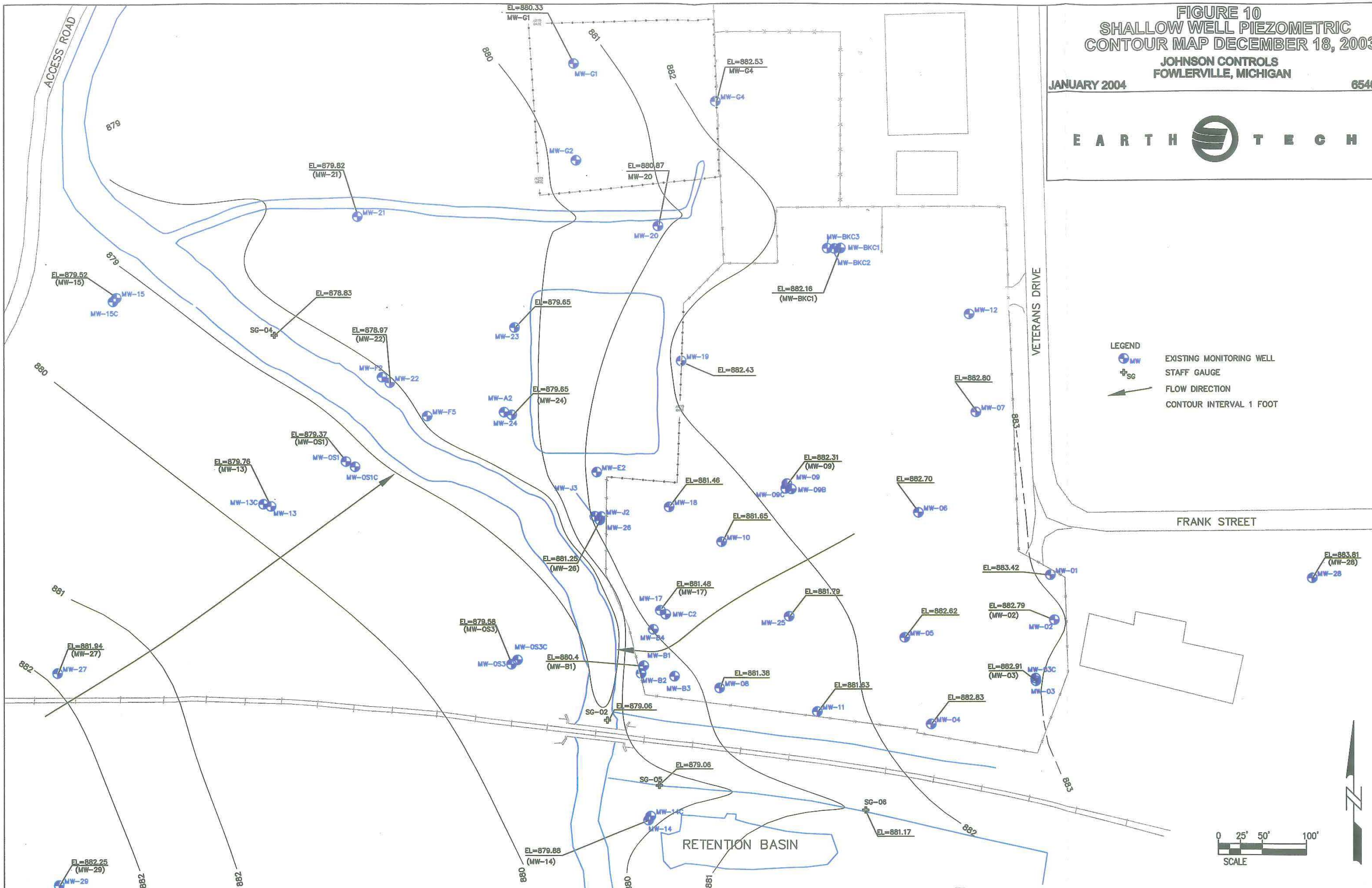


FIGURE 10
SHALLOW WELL PIEZOMETRIC
CONTOUR MAP DECEMBER 18, 2003
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
JANUARY 2004
65468
EARTH TECH
LEGEND
MW EXISTING MONITORING WELL
SG STAFF GAUGE
FLOW DIRECTION
CONTOUR INTERVAL 1 FOOT
ACCESS ROAD
VETERANS DRIVE
FRANK STREET
RETENTION BASIN
SCALE
0 25' 50' 100'
EL=880.33 MW-G1
EL=882.53 MW-G4
MW-G2
EL=880.87 MW-20
EL=879.82 (MW-21)
EL=879.52 (MW-15)
MW-15C
EL=878.83 SG-04
EL=878.97 (MW-22)
MW-F2
MW-F5
EL=879.65 MW-23
EL=879.65 (MW-24)
MW-A2
EL=879.37 (MW-OS1)
MW-OS1C
EL=879.76 (MW-13)
MW-13C
MW-BKC3
MW-BKC1
MW-BKC2
EL=882.16 (MW-BKC1)
MW-12
EL=882.43 MW-19
EL=882.80 MW-07
MW-E2
MW-J3
MW-J2
MW-26
EL=881.25 (MW-26)
EL=881.46 MW-18
EL=881.65 MW-10
EL=882.31 (MW-09)
MW-09C
MW-09B
EL=882.70 MW-06
EL=883.42 MW-01
EL=883.81 (MW-28)
EL=881.48 (MW-17)
MW-C2
EL=881.79 MW-25
EL=882.62 MW-05
EL=882.79 (MW-02)
EL=879.58 (MW-OS3)
MW-OS3C
EL=880.4 (MW-B1)
MW-B4
MW-B2
MW-B3
EL=881.38 MW-08
EL=881.63 MW-11
EL=882.91 (MW-03)
MW-03C
EL=882.83 MW-04
EL=881.94 (MW-27)
EL=879.06 SG-02
EL=879.06 SG-05
MW-14C
MW-14
EL=879.88 (MW-14)
SG-06
EL=881.17
EL=882.25 (MW-29)
879
880
881
882
883

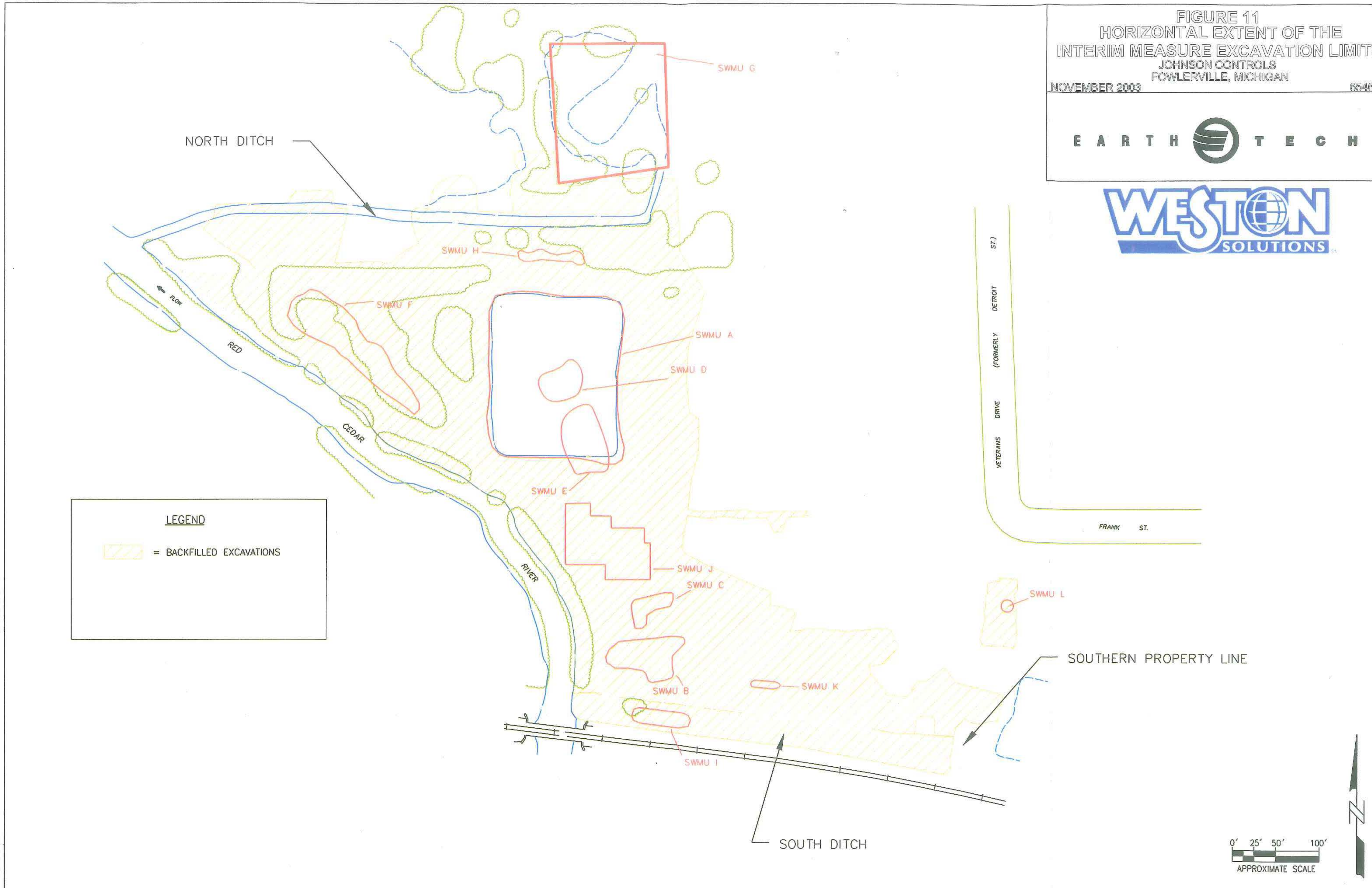


FIGURE 11
HORIZONTAL EXTENT OF THE
INTERIM MEASURE EXCAVATION LIMITS
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
NOVEMBER 2003
65468
EARTH TECH
WESTON SOLUTIONS
NORTH DITCH
SWMU G
SWMU H
SWMU F
SWMU A
SWMU D
SWMU E
SWMU J
SWMU C
SWMU B
SWMU K
SWMU I
SWMU L
FLOW
RED CEDAR RIVER
VETERANS DRIVE (FORMERLY DETROIT ST.)
FRANK ST.
SOUTHERN PROPERTY LINE
SOUTH DITCH
LEGEND
= BACKFILLED EXCAVATIONS
0' 25' 50' 100'
APPROXIMATE SCALE

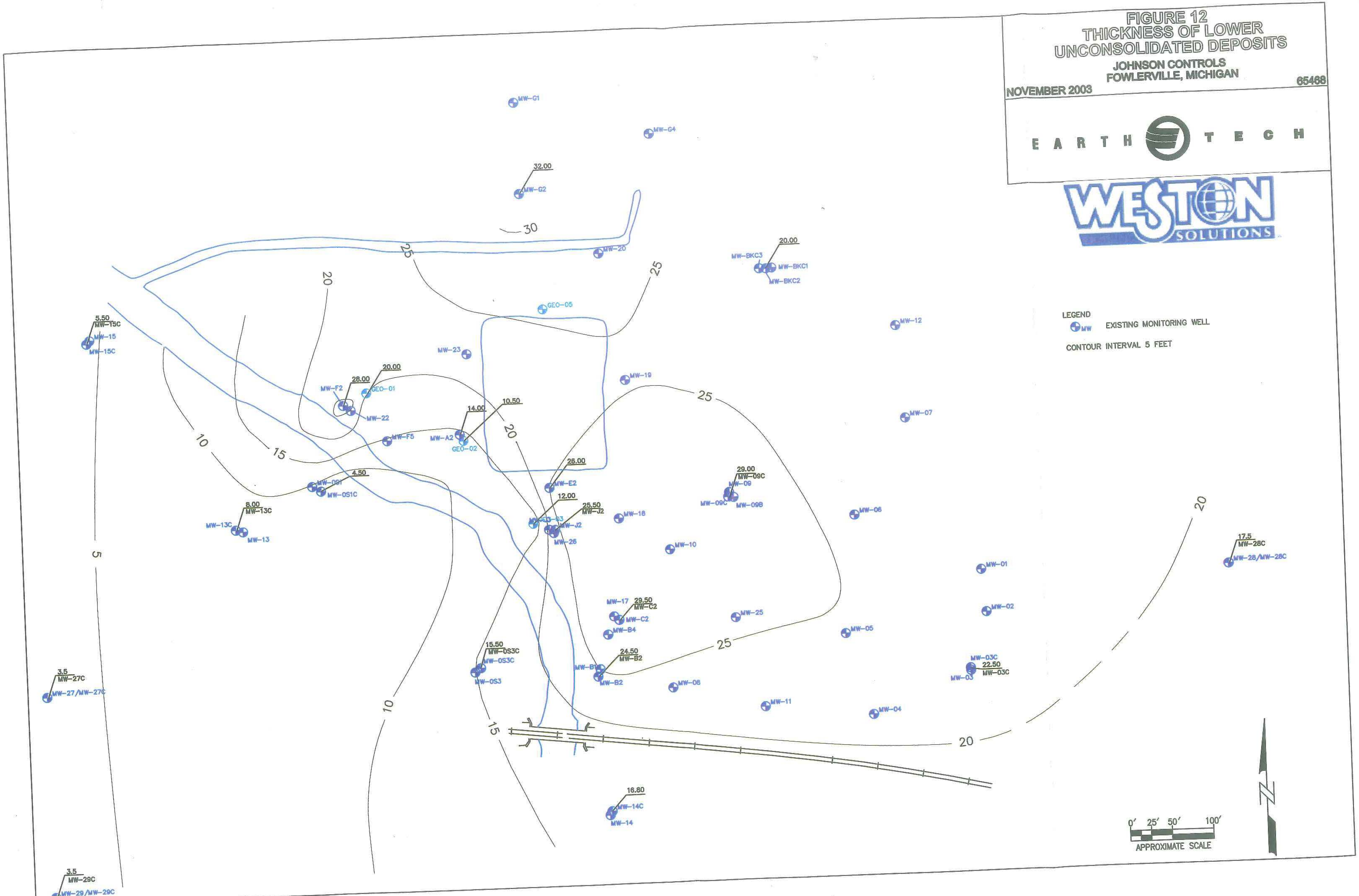


FIGURE 12
THICKNESS OF LOWER UNCONSOLIDATED DEPOSITS
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
NOVEMBER 2003
65468

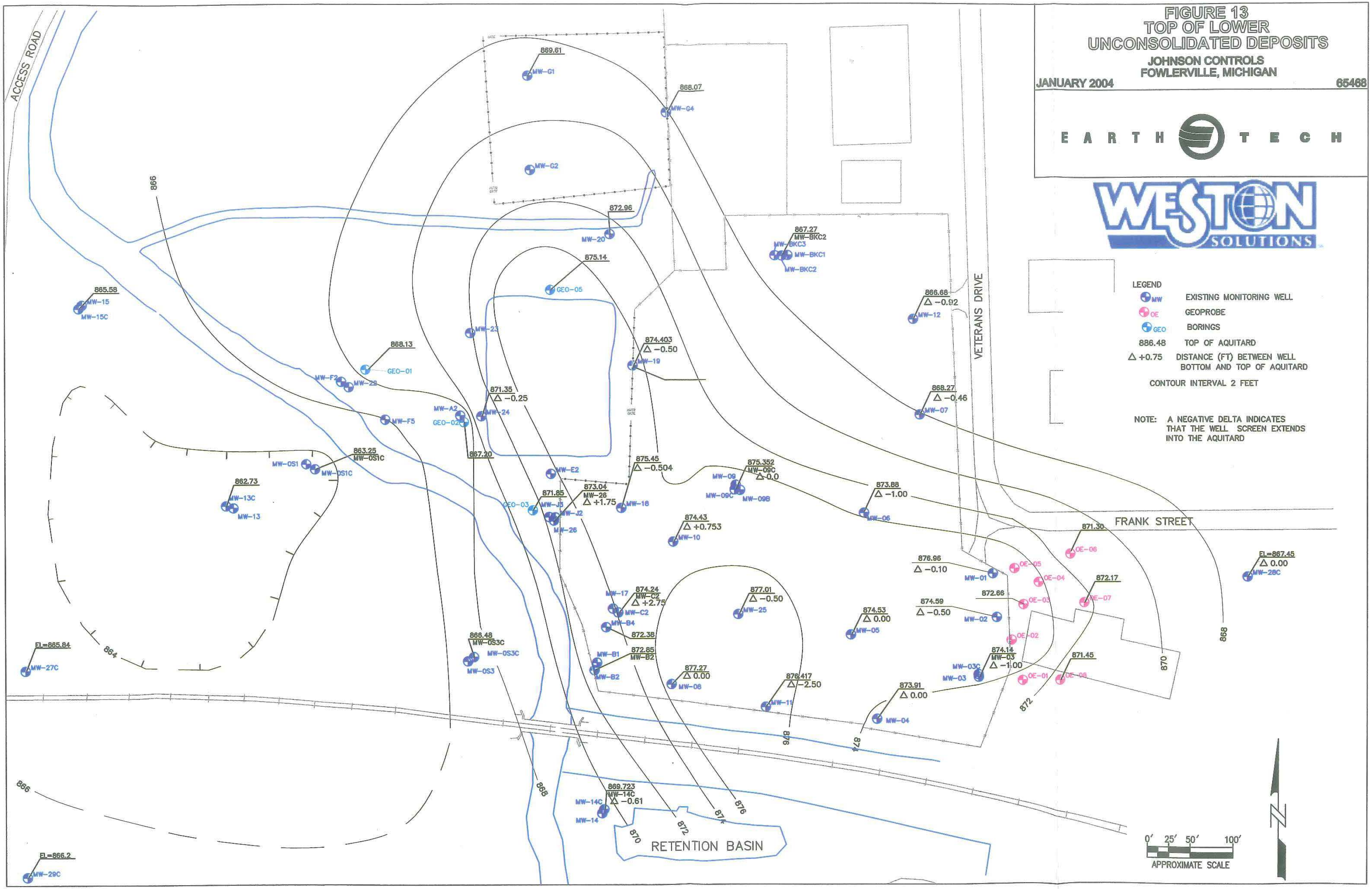


FIGURE 13
TOP OF LOWER
UNCONSOLIDATED DEPOSITS
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
JANUARY 2004
65468
EARTH TECH
WESTON SOLUTIONS
LEGEND
MW EXISTING MONITORING WELL
OE GEOPROBE
GEO BORINGS
886.48 TOP OF AQUITARD
△ +0.75 DISTANCE (FT) BETWEEN WELL BOTTOM AND TOP OF AQUITARD
CONTOUR INTERVAL 2 FEET
NOTE: A NEGATIVE DELTA INDICATES THAT THE WELL SCREEN EXTENDS INTO THE AQUITARD
ACCESS ROAD
VETERANS DRIVE
FRANK STREET
RETENTION BASIN
0' 25' 50' 100'
APPROXIMATE SCALE
N

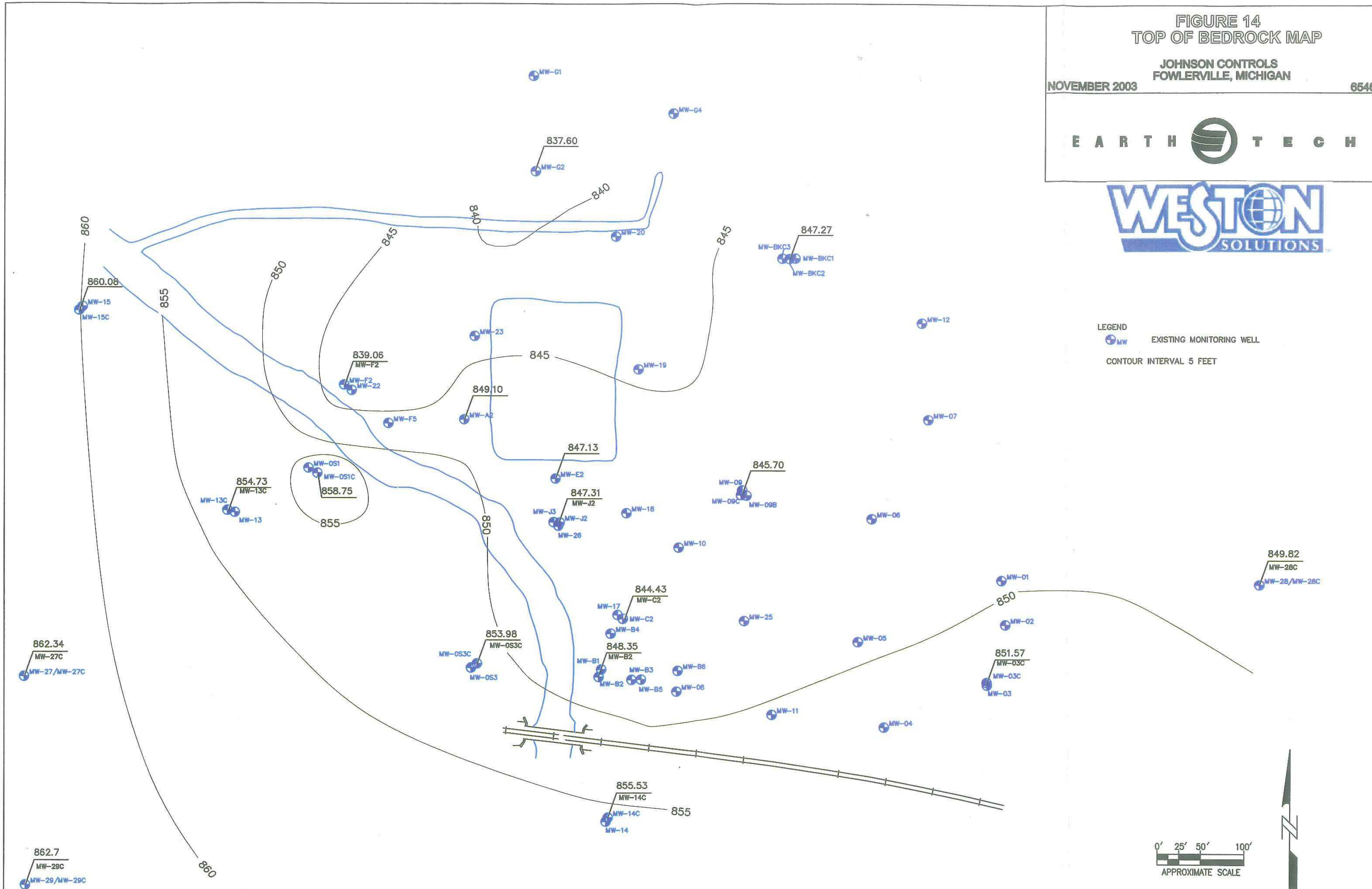


FIGURE 14
TOP OF BEDROCK MAP

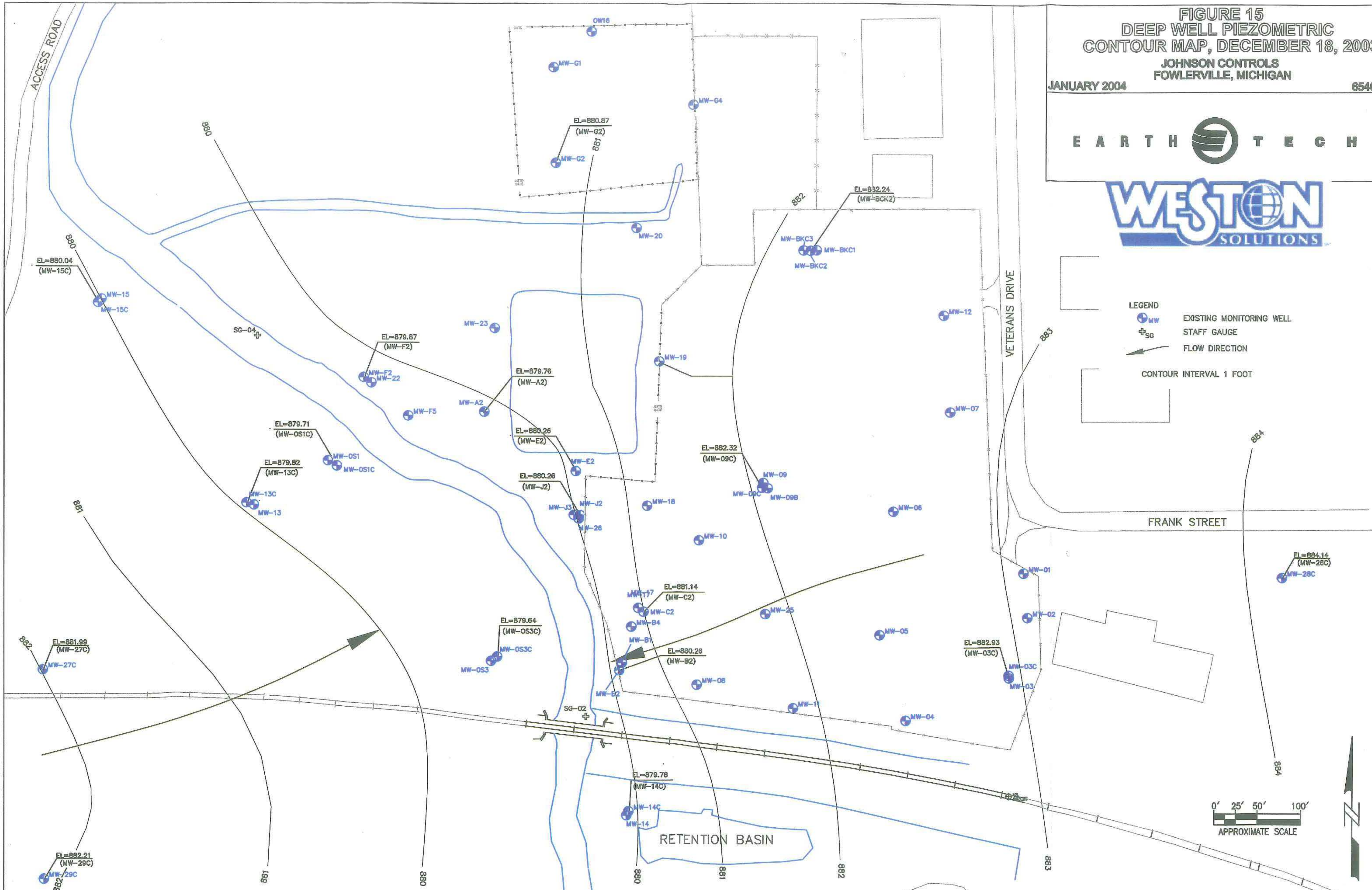
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

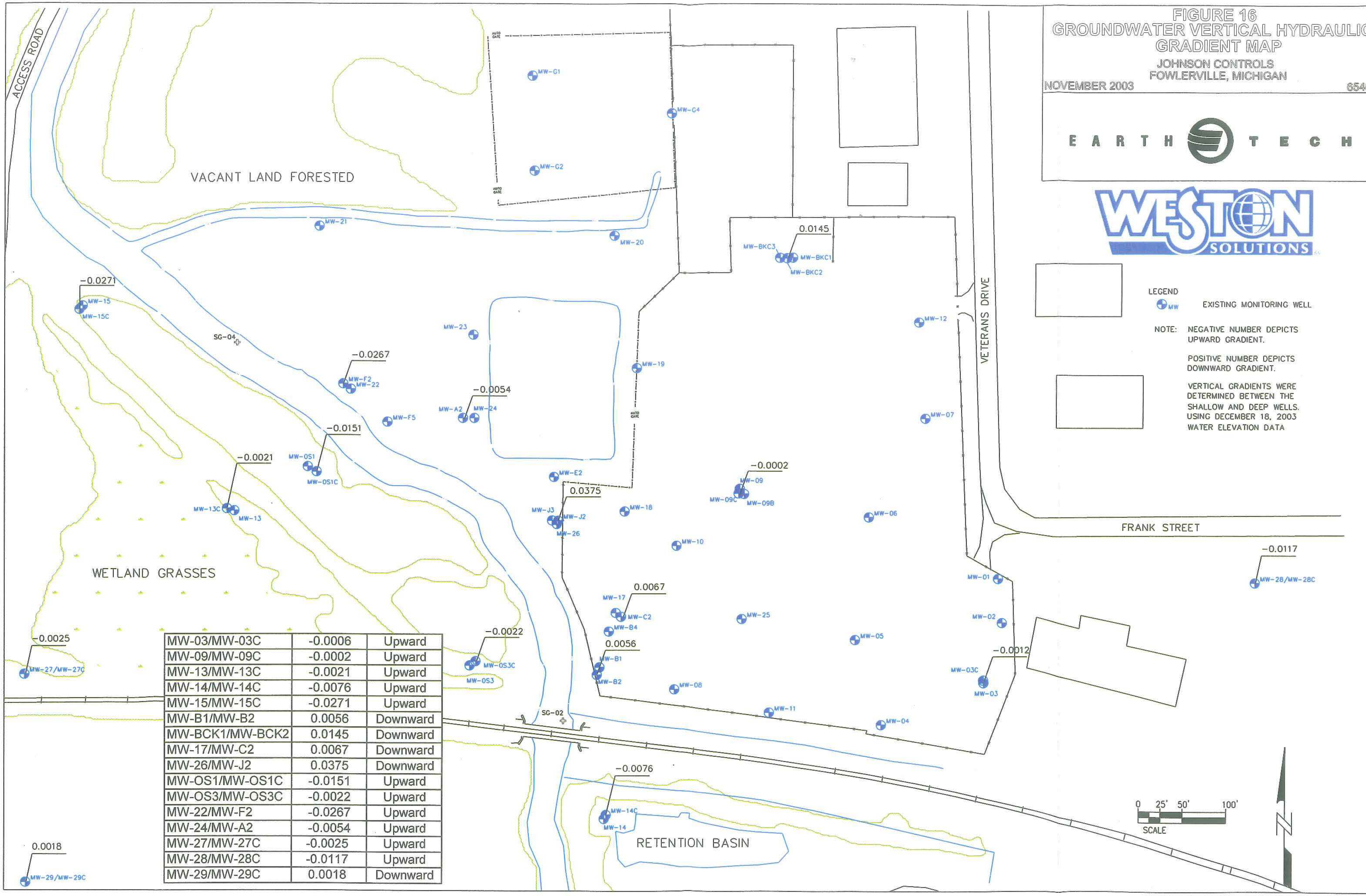
NOVEMBER 2003 65468

FIGURE 15
DEEP WELL PIEZOMETRIC CONTOUR MAP, DECEMBER 18, 2003

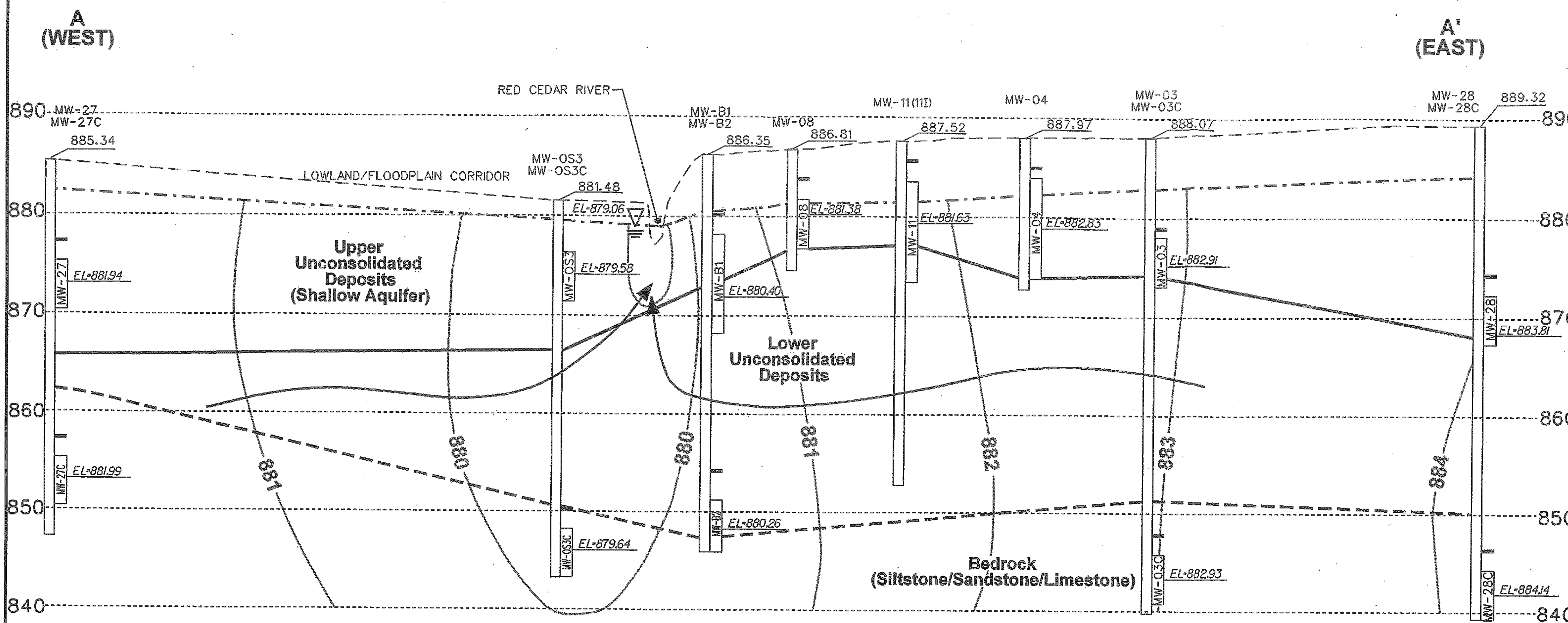
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

JANUARY 2004 65468





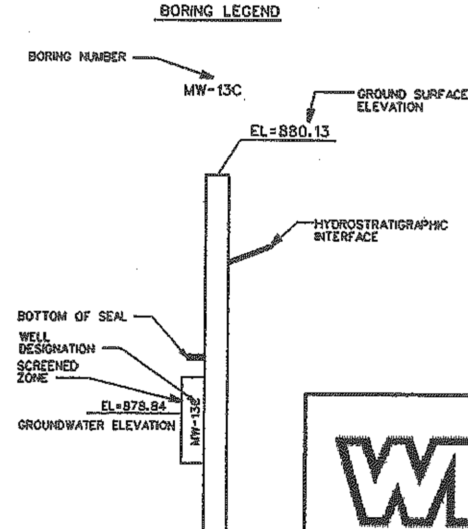
MW-03/MW-03C	-0.0006	Upward
MW-09/MW-09C	-0.0002	Upward
MW-13/MW-13C	-0.0021	Upward
MW-14/MW-14C	-0.0076	Upward
MW-15/MW-15C	-0.0271	Upward
MW-B1/MW-B2	0.0056	Downward
MW-BCK1/MW-BCK2	0.0145	Downward
MW-17/MW-C2	0.0067	Downward
MW-26/MW-J2	0.0375	Downward
MW-OS1/MW-OS1C	-0.0151	Upward
MW-OS3/MW-OS3C	-0.0022	Upward
MW-22/MW-F2	-0.0267	Upward
MW-24/MW-A2	-0.0054	Upward
MW-27/MW-27C	-0.0025	Upward
MW-28/MW-28C	-0.0117	Upward
MW-29/MW-29C	0.0018	Downward



NOTES:

1. THE DIFFERENTIATION BETWEEN UPPER AND LOWER UNCONSOLIDATED DEPOSITS WAS BASED ON FIELD DESCRIPTIONS OF BORING SAMPLES THAT WERE REPORTED ON BORING LOGS.
2. UPPER UNCONSOLIDATED DEPOSITS ARE PREDOMINANTLY SW, SP, SM SOILS THAT INCLUDE CL, ML, CL/ML, SC, GM, GP, AND PT. SOILS BASED ON THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). LOWER UNCONSOLIDATED DEPOSITS ARE PREDOMINANTLY CL, ML, AND CL/ML SOILS THAT INCLUDE ML/CL, GP, SW, SP, AND SM SOILS BASED ON THE USCS.
3. GROUNDWATER ELEVATIONS SHOWN ON THE CROSS SECTION WERE MEASURED DECEMBER 18, 2003.
4. ESTIMATED GRADE REPRESENTS GROUND SURFACE ELEVATIONS AT THE TIME OF DRILLING AND ARE REPRESENTATIVE OF PRE-CONSTRUCTION ELEVATIONS. FINAL GRADE REPRESENTS POST-CONSTRUCTION ELEVATIONS.

BORING LEGEND



LEGEND

- CONTACT BETWEEN MAJOR HYDROSTRATIGRAPHIC UNITS
- INFERRED CONTACT
- ESTIMATED GRADE
- WATER TABLE LEVEL
- FINAL GRADE

HORIZONTAL SCALE 0' 100'
VERTICAL SCALE 0' 10'

WESTON SOLUTIONS

EARTH TECH

FIGURE 17
GROUNDWATER FLOW NET

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

FEBRUARY 2004

65468

DATE =Wed Feb 11 15:49:33 2004
DGN =\\usesba01\data\work\65468\cadd\FIGURE17.dgn

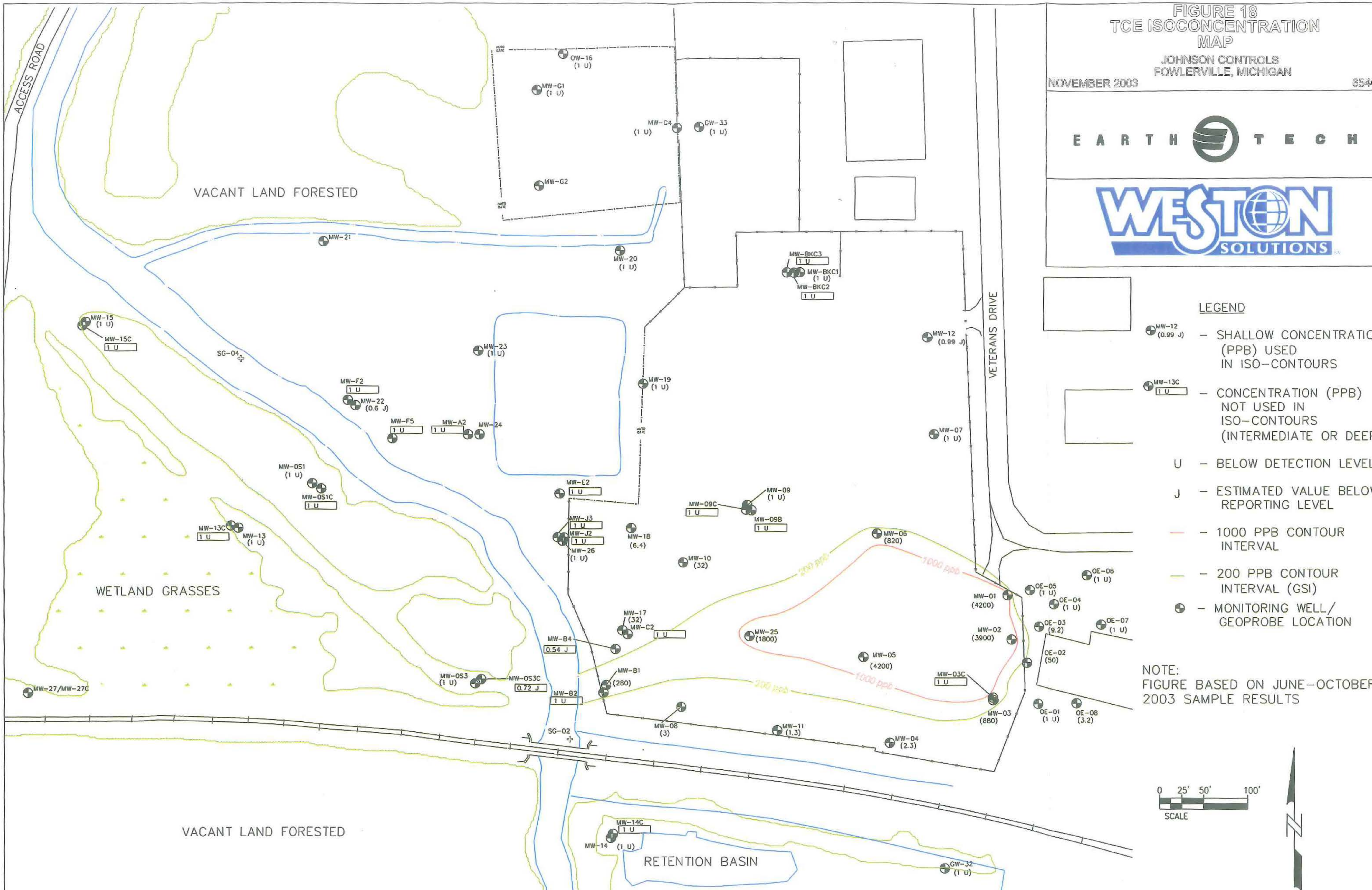


FIGURE 18
TCE ISOCONCENTRATION MAP
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
NOVEMBER 2003
65468
EARTH TECH
WESTON SOLUTIONS
LEGEND
MW-12 (0.99 J) – SHALLOW CONCENTRATION (PPB) USED IN ISO-CONTOURS
MW-13C 1 U – CONCENTRATION (PPB) NOT USED IN ISO-CONTOURS (INTERMEDIATE OR DEEP)
U – BELOW DETECTION LEVEL
J – ESTIMATED VALUE BELOW REPORTING LEVEL
– 1000 PPB CONTOUR INTERVAL
– 200 PPB CONTOUR INTERVAL (GSI)
– MONITORING WELL/ GEOPROBE LOCATION
NOTE:
FIGURE BASED ON JUNE-OCTOBER 2003 SAMPLE RESULTS
0 25' 50' 100'
SCALE
ACCESS ROAD
VETERANS DRIVE
VACANT LAND FORESTED
WETLAND GRASSES
VACANT LAND FORESTED
RETENTION BASIN
200 ppb
1000 ppb
OW-16 (1 U)
MW-G1 (1 U)
MW-G4 (1 U)
GW-33 (1 U)
MW-G2
MW-21
MW-20 (1 U)
MW-BKC3 1 U
MW-BKC1 (1 U)
MW-BKC2 1 U
MW-15 (1 U)
MW-15C 1 U
SG-04
MW-23 (1 U)
MW-19 (1 U)
MW-12 (0.99 J)
MW-F2 1 U
MW-22 (0.6 J)
MW-F5 1 U
MW-A2 1 U
MW-24
MW-07 (1 U)
MW-0S1 (1 U)
MW-0S1C 1 U
MW-E2 1 U
MW-09 (1 U)
MW-09C 1 U
MW-09B 1 U
MW-J3 1 U
MW-J2 1 U
MW-26 (1 U)
MW-18 (6.4)
MW-13C 1 U
MW-13 (1 U)
MW-06 (820)
MW-10 (32)
OE-06 (1 U)
OE-05 (1 U)
OE-04 (1 U)
MW-01 (4200)
MW-17 (32)
MW-C2 1 U
MW-25 (1800)
MW-02 (3900)
OE-03 (9.2)
OE-07 (1 U)
MW-B4 0.54 J
MW-05 (4200)
OE-02 (50)
MW-B1 (280)
MW-03C 1 U
MW-0S3 (1 U)
MW-0S3C 0.72 J
MW-27/MW-27C
MW-B2 1 U
MW-03 (880)
OE-01 (1 U)
OE-08 (3.2)
MW-08 (3)
MW-11 (1.3)
SG-02
MW-04 (2.3)
MW-14C 1 U
MW-14 (1 U)
GW-32 (1 U)
MW-29/MW-29C

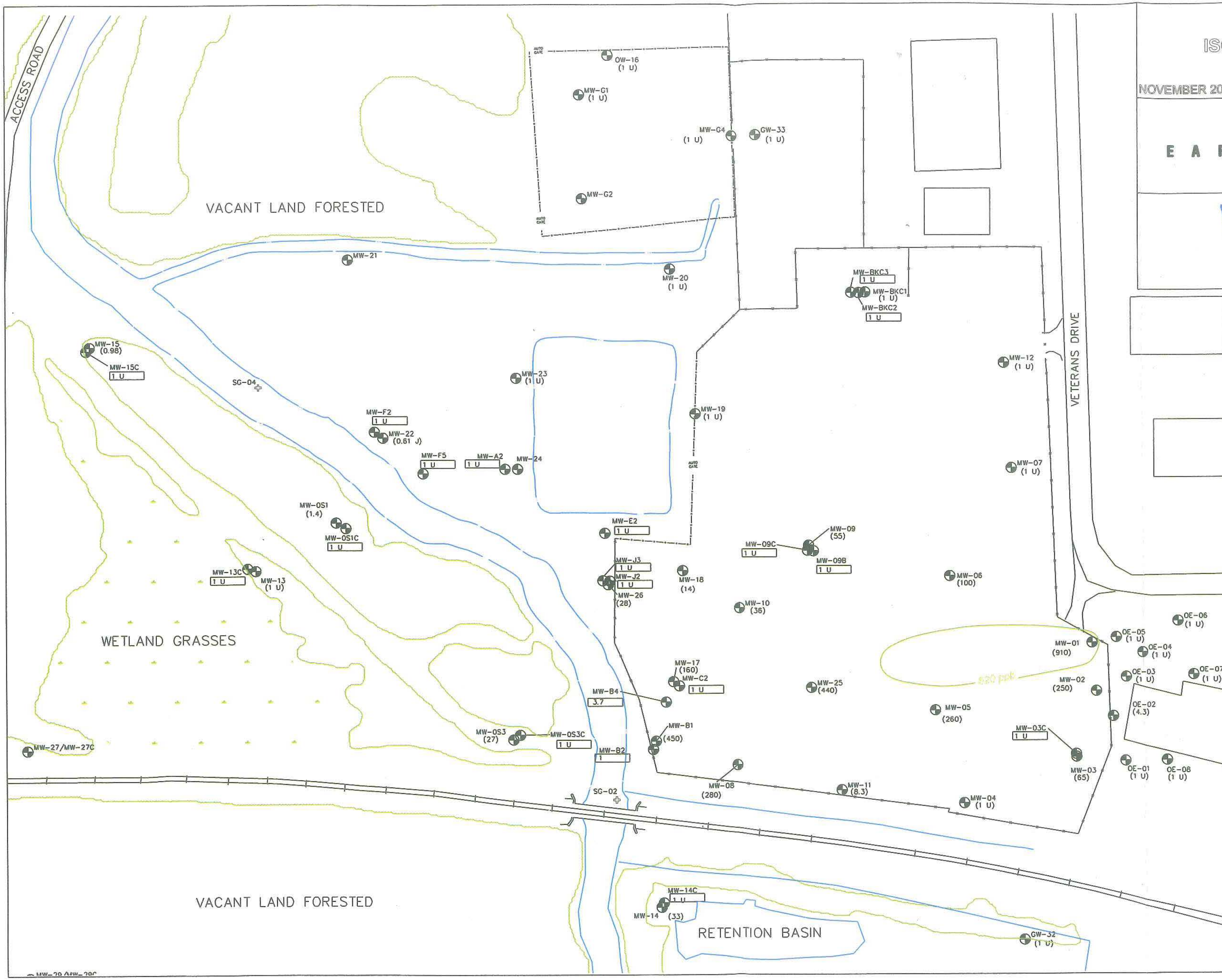


FIGURE 19
cis-1,2-DCE
ISOCONCENTRATION MAP

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

NOVEMBER 2003 65468

EARTH TECH

WESTON SOLUTIONS

LEGEND

- MW-12 (1 U) – SHALLOW CONCENTRATION (PPB) USED IN ISO-CONTOURS
- MW-13C 1 U – CONCENTRATION (PPB) NOT USED IN ISO-CONTOURS (INTERMEDIATE OR DEEP)
- U – BELOW DETECTION LEVEL
- J – ESTIMATED VALUE BELOW REPORTING LEVEL
- – 620 PPB CONTOUR INTERVAL (GSI)
- – MONITORING WELL/ GEOPROBE LOCATION

NOTE:
FIGURE BASED ON JUNE-OCTOBER 2003 SAMPLE RESULTS

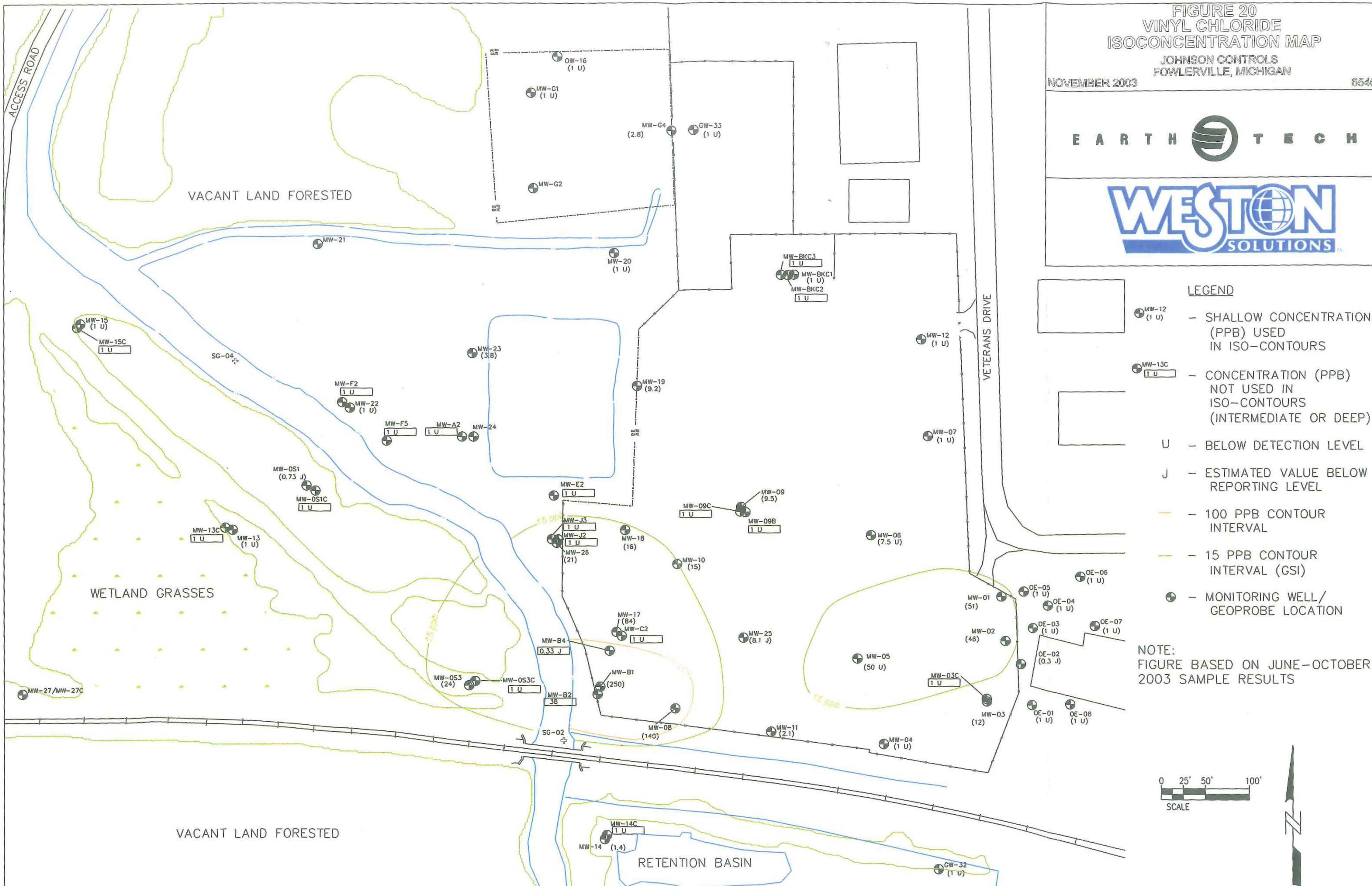


FIGURE 20
VINYL CHLORIDE
ISOCONCENTRATION MAP
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
NOVEMBER 2003
65468
EARTH TECH
WESTON SOLUTIONS
LEGEND
MW-12 (1 U) – SHALLOW CONCENTRATION (PPB) USED IN ISO-CONTOURS
MW-13C 1 U – CONCENTRATION (PPB) NOT USED IN ISO-CONTOURS (INTERMEDIATE OR DEEP)
U – BELOW DETECTION LEVEL
J – ESTIMATED VALUE BELOW REPORTING LEVEL
– 100 PPB CONTOUR INTERVAL
– 15 PPB CONTOUR INTERVAL (GSI)
– MONITORING WELL/ GEOPROBE LOCATION
NOTE:
FIGURE BASED ON JUNE-OCTOBER 2003 SAMPLE RESULTS
0 25' 50' 100'
SCALE
N
ACCESS ROAD
VACANT LAND FORESTED
WETLAND GRASSES
VETERANS DRIVE
RETENTION BASIN
VACANT LAND FORESTED
OW-16 (1 U)
MW-G1 (1 U)
MW-G4 (2.8)
GW-33 (1 U)
MW-G2
MW-21
MW-20 (1 U)
MW-BKC3 1 U
MW-BKC1 (1 U)
MW-BKC2 1 U
MW-15 (1 U)
MW-15C 1 U
SG-04
MW-23 (3.8)
MW-12 (1 U)
MW-19 (9.2)
MW-F2 1 U
MW-22 (1 U)
MW-F5 1 U
MW-A2 1 U
MW-24
MW-07 (1 U)
MW-0S1 (0.73 J)
MW-0S1C 1 U
MW-E2 1 U
MW-09C 1 U
MW-09 (9.5)
MW-09B 1 U
MW-13C 1 U
MW-13 (1 U)
MW-J3 1 U
MW-J2 1 U
MW-26 (21)
MW-18 (16)
MW-10 (15)
MW-06 (7.5 U)
OE-06 (1 U)
OE-05 (1 U)
OE-04 (1 U)
MW-01 (51)
OE-03 (1 U)
OE-07 (1 U)
MW-17 (84)
MW-C2 1 U
MW-25 (8.1 J)
MW-02 (46)
MW-B4 0.33 J
MW-05 (50 U)
OE-02 (0.3 J)
MW-B1 (250)
MW-0S3 (24)
MW-0S3C 1 U
MW-03C 1 U
MW-27/MW-27C
MW-B2 38
MW-03 (12)
OE-01 (1 U)
OE-08 (1 U)
MW-08 (140)
MW-11 (2.1)
MW-04 (1 U)
SG-02
15 PPB
MW-14C 1 U
MW-14 (1.4)
GW-32 (1 U)

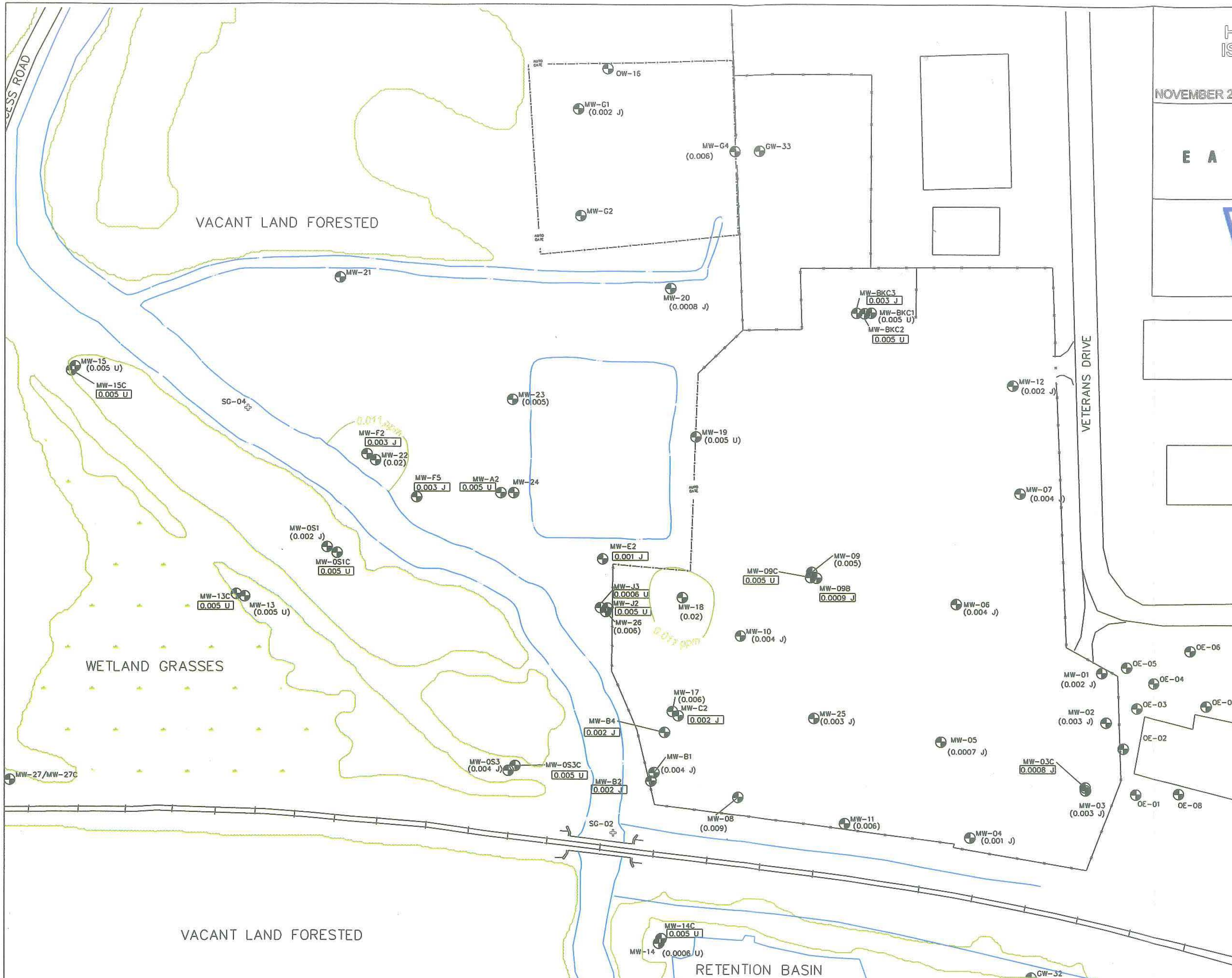
FIGURE 21
HEXAVALENT CHROMIUM ISOCONCENTRATION MAP

JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

NOVEMBER 2003 65468

EARTH TECH

WESTON SOLUTIONS



LEGEND

MW-12 (0.002 J) – SHALLOW CONCENTRATION (PPM) USED IN ISO-CONTOURS

MW-13C 0.005 U – CONCENTRATION (PPM) NOT USED IN ISO-CONTOURS (INTERMEDIATE OR DEEP)

U – BELOW DETECTION LEVEL

J – ESTIMATED VALUE BELOW REPORTING LEVEL

— – 0.011 PPM CONTOUR INTERVAL (GSI)

– MONITORING WELL/ GEOPROBE LOCATION

NOTE:
FIGURE BASED ON JUNE-OCTOBER 2003 SAMPLE RESULTS

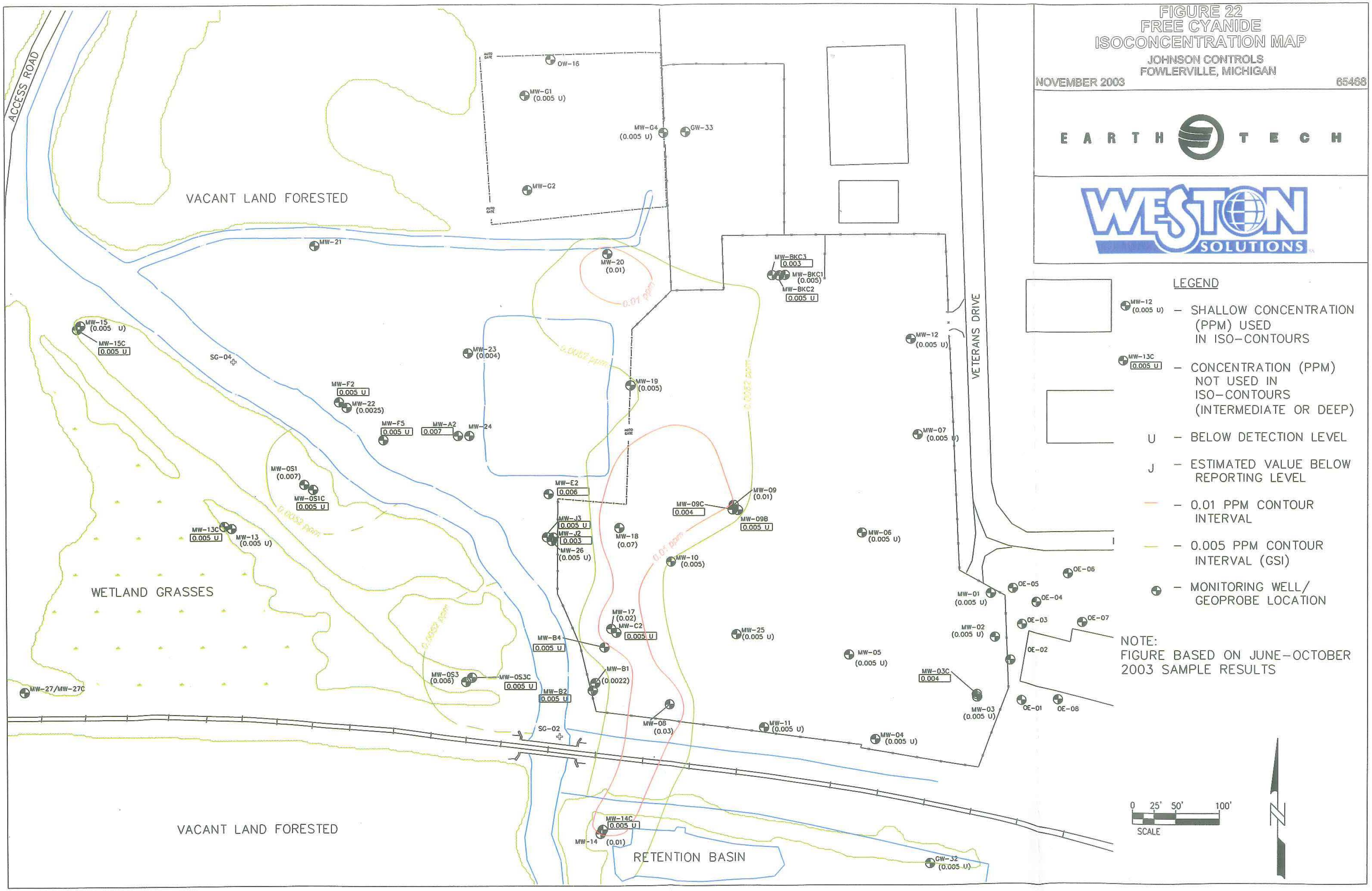


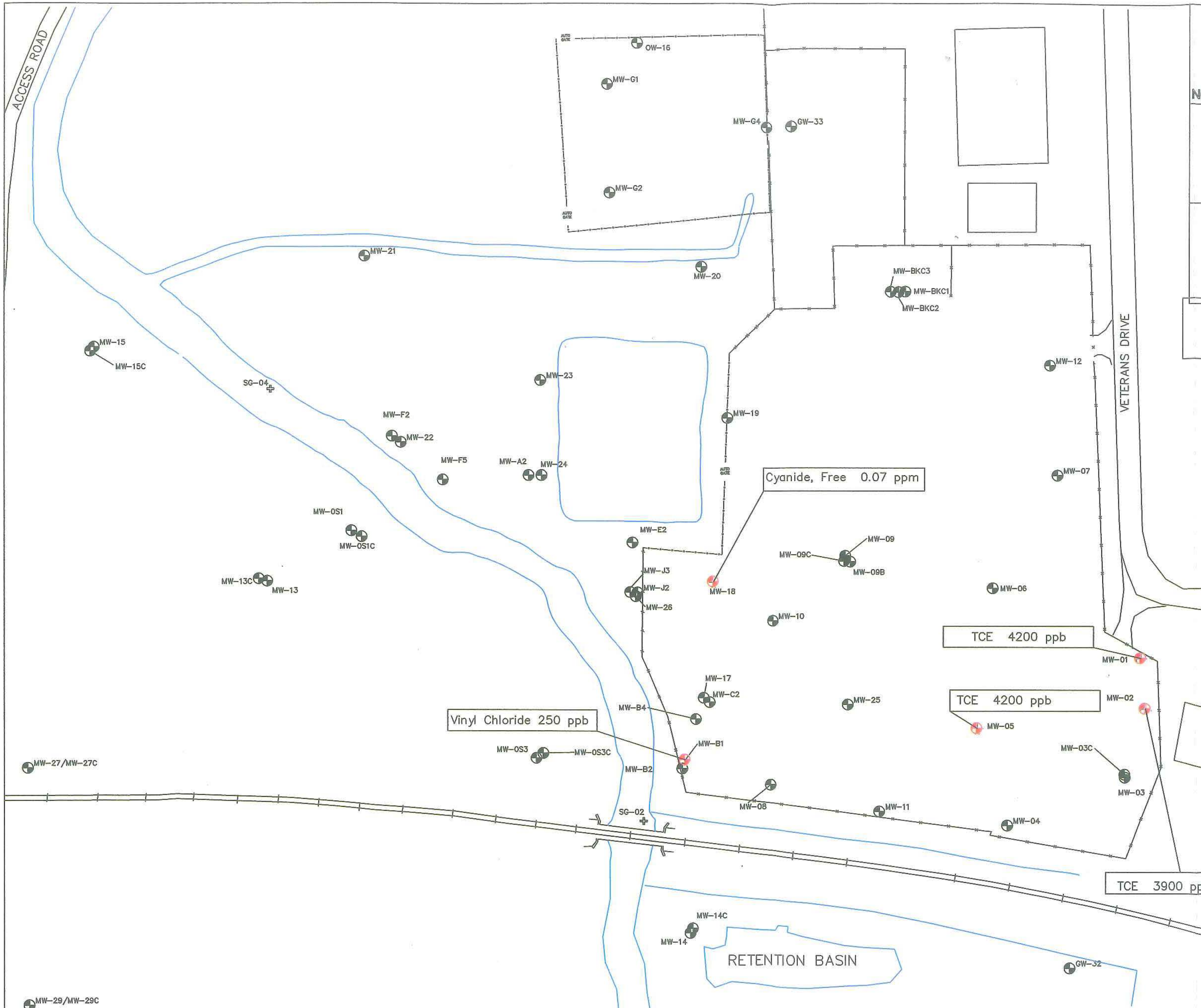
FIGURE 22
FREE CYANIDE
ISOCONCENTRATION MAP
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN
NOVEMBER 2003
65468
EARTH TECH
WESTON SOLUTIONS
LEGEND
MW-12 (0.005 U) – SHALLOW CONCENTRATION (PPM) USED IN ISO-CONTOURS
MW-13C 0.005 U – CONCENTRATION (PPM) NOT USED IN ISO-CONTOURS (INTERMEDIATE OR DEEP)
U – BELOW DETECTION LEVEL
J – ESTIMATED VALUE BELOW REPORTING LEVEL
– 0.01 PPM CONTOUR INTERVAL
– 0.005 PPM CONTOUR INTERVAL (GSI)
– MONITORING WELL/ GEOPROBE LOCATION
NOTE:
FIGURE BASED ON JUNE-OCTOBER 2003 SAMPLE RESULTS
0 25' 50' 100'
SCALE
N
ACCESS ROAD
VACANT LAND FORESTED
VETERANS DRIVE
WETLAND GRASSES
RETENTION BASIN
OW-16
MW-G1 (0.005 U)
MW-G4 (0.005 U)
GW-33
MW-G2
MW-21
MW-20 (0.01)
0.01 ppm
MW-BKC3 0.003
MW-BKC1 (0.005)
MW-BKC2 0.005 U
MW-15 (0.005 U)
MW-15C 0.005 U
SG-04
MW-23 (0.004)
0.0052 ppm
MW-12 (0.005 U)
MW-19 (0.005)
MW-F2 0.005 U
MW-22 (0.0025)
MW-F5 0.005 U
MW-A2 0.007
MW-24
MW-07 (0.005 U)
MW-0S1 (0.007)
MW-0S1C 0.005 U
MW-E2 0.006
MW-09 (0.01)
MW-09C 0.004
MW-09B 0.005 U
MW-13C 0.005 U
MW-13 (0.005 U)
MW-J3 0.005 U
MW-J2 0.003
MW-26 (0.005 U)
MW-18 (0.07)
MW-06 (0.005 U)
MW-10 (0.005)
OE-06
OE-05
OE-04
MW-01 (0.005 U)
OE-03
OE-07
MW-17 (0.02)
MW-C2 0.005 U
MW-25 (0.005 U)
MW-02 (0.005 U)
MW-B4 0.005 U
OE-02
MW-05 (0.005 U)
MW-B1 (0.0022)
MW-0S3 (0.006)
MW-0S3C 0.005 U
MW-B2 0.005 U
MW-03C 0.004
MW-27/MW-27C
MW-03 (0.005 U)
OE-01
OE-08
MW-08 (0.03)
MW-11 (0.005 U)
MW-04 (0.005 U)
SG-02
MW-14C 0.005 U
MW-14 (0.01)
GW-32 (0.005 U)

FIGURE 23
ON-SITE AND OFF-SITE GROUNDWATER MONITORING WELLS EXCEEDING 10x THE GSI
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

NOVEMBER 2003 65468

EARTH TECH

WESTON SOLUTIONS



LEGEND

– MONITORING WELLS WITH RESULTS EXCEEDING 10x GSI CRITERIA

RELEVANT GSI CRITERIA

VOCs
cis-1,2-DCE 620 ppb
TCE 200 ppb
Vinyl Chloride 15 ppb

Total Metals
Arsenic 0.15 ppm
Cadmium 0.0062 ppm
Copper 0.029 ppm
Nickel 0.17 ppm

Dissolved Metals
Cadmium 0.0062 ppm
Chromium, Hexavalent 0.011 ppm

Other
Cyanide, Free 0.0052 ppm

ppb – PARTS PER BILLION
ppm – PARTS PER MILLION

NOTE:
FIGURE BASED ON JUNE-OCTOBER 2003 SAMPLE RESULTS

0 25' 50' 100'
SCALE

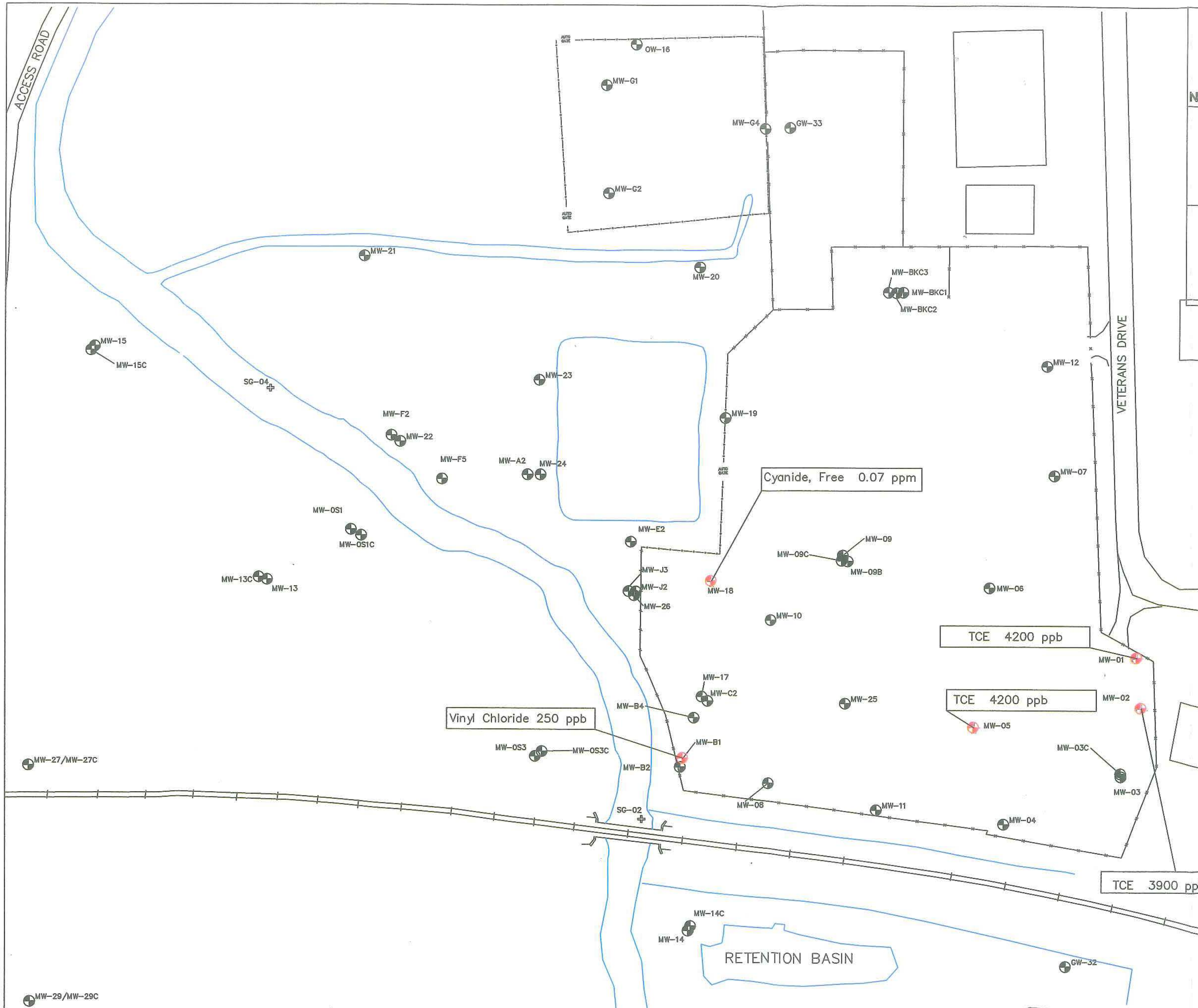
N

FIGURE 23
ON-SITE AND OFF-SITE GROUNDWATER MONITORING WELLS EXCEEDING 10x THE GSI
JOHNSON CONTROLS
FOWLERVILLE, MICHIGAN

NOVEMBER 2003 65468

EARTH TECH

WESTON SOLUTIONS



LEGEND

– MONITORING WELLS WITH RESULTS EXCEEDING 10x GSI CRITERIA

RELEVANT GSI CRITERIA

VOCs
cis-1,2-DCE 620 ppb
TCE 200 ppb
Vinyl Chloride 15 ppb

Total Metals
Arsenic 0.15 ppm
Cadmium 0.0062 ppm
Copper 0.029 ppm
Nickel 0.17 ppm

Dissolved Metals
Cadmium 0.0062 ppm
Chromium, Hexavalent 0.011 ppm

Other
Cyanide, Free 0.0052 ppm

ppb – PARTS PER BILLION
ppm – PARTS PER MILLION

NOTE:
FIGURE BASED ON JUNE-OCTOBER 2003 SAMPLE RESULTS

0 25' 50' 100'
SCALE

N

TABLES

TABLES

TABLE 1
GROUNDWATER EXCEEDANCES
JCI - FOWLERVILLE

Location	FieldID	Date Sampled	On-Site/ Off-Site	1,1-Dichloro ethene	cis-1,2-Dichloro ethene	Methylene chloride	trans-1,2-Dichloro ethylene	Trichloro ethene	Vinyl chloride	Di-N-Butyl phthalate	Arsenic, Total	Cadmium, Total	Copper, Total	Lead, Total	Nickel, Total	Cadmium, Dissolved	Chromium, Hexavalent-Dissolved	Cyanide, Free
				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Contact Criteria:				11,000.	200,000.	220,000.	220,000.	22,000.	1,000.	11,000.	4.3	190.	7,400.	NL	74,000.	190.	460.	57.
GSI:				65.	620.	940.	1,500.	200.	15.	9.7	0.15	0.0062	0.029	0.045	0.17	0.0062	0.011	0.0052
GSI Human Health Based:				33,000.	36,000.	2,600.	25,000.	370.	13.	690.	0.28	0.13	64.	0.19	210.	0.13	9.4	48.
Residential Drinking Water:				7.	70.	5.	100.	5.	2.	880.	0.05	0.005	1.	0.004	0.1	0.005	0.1	0.2
Volatilization to Indoor Air:				1,300.	210,000.	1,400,000.	200,000.	97,000.	13,000.	NL	NL	NL	NL	NL	NL	NL	NL	NL
MW-01	MW01- 090903-01	9/9/03	On-Site	14 J	900	46 J	---	4200	42 J	---	---	---	---	---	---	---	---	---
MW-01	MW01- 090903-02	9/9/03	On-Site	---	910	40 J	---	4200	51	---	---	---	---	---	---	---	---	---
MW-01	MW01- 110503-01	11/5/03	On-Site	---	600	75 J	---	2900	21 J	---	---	---	---	---	---	---	---	---
MW-02	EW-14- 110603-01	11/6/03	On-Site	---	250	11 J	---	3400	28	---	---	---	---	---	---	---	---	---
MW-02	MW02- 090903-01	9/9/03	On-Site	8.1 J	250	35 J	---	3900	46	---	---	---	---	---	---	---	---	---
MW-03	MW03- 090903-01	9/9/03	On-Site	---	---	11 J	---	880	12	---	---	---	---	---	---	---	---	---
MW-03	MW03- 110603-01	11/6/03	On-Site	---	140	10 J	---	1300	12	---	---	---	---	---	---	---	---	---
MW-05	MW05- 090903-01	9/9/03	On-Site	---	260	48 J	---	4200	---	---	---	---	---	---	---	---	---	---
MW-05	MW05- 110503-01	11/5/03	On-Site	---	310	66 J	---	2100	---	---	---	---	---	---	---	---	---	---
MW-06	MW06- 091003-01	9/10/03	On-Site	---	100	10 J	---	820	7.5 J	---	---	---	---	---	---	---	---	---
MW-06	MW06- 110503-01	11/5/03	On-Site	---	91	6.9 J	---	590	4.8 J	---	---	---	---	---	---	---	---	---
MW-06	MW06- 110503-02	11/5/03	On-Site	---	71	5.6 J	---	340	3.1 J	---	---	---	---	---	---	---	---	---
MW-08	MW08- 100203-01	10/2/03	On-Site	---	280	---	---	---	140	---	---	---	0.181	---	0.14	---	---	0.03
MW-08	MW08- 110403-01	11/4/03	On-Site	---	320	---	---	---	130	---	---	---	0.148	---	0.184	---	0.02	0.04
MW-09	MW09- 100103-01	10/1/03	On-Site	---	---	---	---	---	9.5	---	---	---	---	---	---	---	---	0.01
MW-09	MW09- 110503-01	11/5/03	On-Site	---	---	---	---	---	2.9	---	---	---	---	---	---	---	---	0.01
MW-0S1	MW-0S1- 110403-01	11/4/03	Off-Site	---	---	---	---	---	---	12	---	---	---	---	---	---	---	0.007
MW-0S1	MW0S1- 100303-01	10/3/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.007
MW-0S3	MW-0S3- 110603-01	11/6/03	Off-Site	---	---	---	---	---	27	---	---	---	---	---	---	---	---	---
MW-0S3	MW-0S3- 110603-02	11/6/03	Off-Site	---	---	---	---	---	29	---	---	---	---	---	---	---	---	---
MW-0S3	MW0S3- 100303-01	10/3/03	Off-Site	---	---	---	---	---	24	---	---	---	---	---	---	---	---	0.006
MW-OS3	MW-0S3- 071703-01	7/17/03	Off-Site	---	---	---	---	---	34	---	---	---	---	---	---	---	---	---
MW-0S3C	MW-0S3C- 110503-01	11/5/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.007
MW-10	MW10- 100103-01	10/1/03	On-Site	---	---	---	---	32	15	---	---	---	---	---	---	---	---	---
MW-10	MW10- 110503-01	11/5/03	On-Site	---	---	---	---	28	23	---	---	---	---	---	---	---	---	---
MW-11	MW11- 091003-01	9/10/03	On-Site	---	---	---	---	---	2.1	---	---	---	---	---	---	---	---	---
MW-11	MW11- 110503-01	11/5/03	On-Site	---	---	---	---	---	2.5	---	---	---	---	---	---	---	---	0.008
MW-13	MW-13- 110403-01	11/4/03	Off-Site	---	---	---	---	---	---	12	---	---	---	---	---	---	---	0.01
MW-13C	MW-13C 110403-02	11/4/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.006
MW-13C	MW-13C- 110403-01	11/4/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.008
MW-14	MW14- 093003-01	9/30/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.01
MW-14	MW14- 110503-01	11/5/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.01
MW-14C	MW14C- 110503-01	11/5/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.006
MW-15	MW-15- 110303-01	11/3/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.03
MW-15C	MW-15C- 110303-01	11/3/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.01
MW-17	MW17- 100203-01	10/2/03	On-Site	---	160	---	---	26	84	---	---	---	---	---	---	---	---	0.02
MW-17	MW17- 110403-01	11/4/03	On-Site	---	410	5.1 J	140	300	330	15	---	---	---	---	---	---	---	0.01
MW-18	MW-18- 110403-01	11/4/03	On-Site	---	---	---	---	5.6	14	---	---	---	0.078	---	---	---	---	0.04
MW-18	MW18- 100103-01	10/1/03	On-Site	---	---	---	---	6.4	16	---	---	---	0.103	---	---	---	0.02	0.07
MW-19	MW19- 100303-01	10/3/03	On-Site	---	---	---	---	---	9	---	---	---	---	---	---	---	---	---
MW-19	MW19- 100303-02	10/3/03	On-Site	---	---	---	---	---	9.2	---	---	---	---	---	---	---	---	---
MW-19	MW19- 110403-01	11/4/03	On-Site	---	---	---	---	---	7.5	---	---	---	---	---	---	---	---	0.008
MW-20	MW-20- 110403-01	11/4/03	Off-Site	---	---	---	---	---	---	---	---	---	0.032	---	---	---	---	---
MW-20	MW20- 100303-01	10/3/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.01
MW-22	MW-22- 110303-01	11/3/03	On-Site	---	---	---	---	---	---	---	0.131	---	---	---	---	---	0.02	0.009
MW-22	MW22- 100201-01	10/2/03	On-Site	---	---	---	---	---	---	---	0.161	---	---	---	---	---	0.02	---
MW-23	MW-23- 110303-01	11/3/03	On-Site	---	---	---	---	---	3.1	---	---	---	---	---	---	---	---	0.006
MW-23	MW23- 100303-01	10/3/03	On-Site	---	---	---	---	---	3.8	---	---	---	---	---	---	---	---	---
MW-23	MW23- 100303-02	10/3/03	On-Site	---	---	---	---	---	3.7	---	---	---	---	---	---	---	---	---
MW-25	MW25- 100203-01	10/2/03	On-Site	---	440	---	220	1800	8.1 J	---	---	---	---	---	1.18	---	---	---
MW-25	MW25- 110503-01	11/5/03	On-Site	---	310	11 J	150	1200	6.4 J	---	---	---	---	---	1.07	---	---	---

TABLE 1
GROUNDWATER EXCEEDANCES
JCI - FOWLERVILLE

Location	FieldID	Date Sampled	On-Site/ Off-Site	1,1-Dichloro ethene	cis-1,2-Dichloro ethene	Methylene chloride	trans-1,2-Dichloro ethylene	Trichloro ethene	Vinyl chloride	Di-N-Butyl phthalate	Arsenic, Total	Cadmium, Total	Copper, Total	Lead, Total	Nickel, Total	Cadmium, Dissolved	Chromium, Hexavalent-Dissolved	Cyanide, Free
				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
			Contact Criteria:	11,000.	200,000.	220,000.	220,000.	22,000.	1,000.	11,000.	4.3	190.	7,400.	NL	74,000.	190.	460.	57.
			GSI:	65.	620.	940.	1,500.	200.	15.	9.7	0.15	0.0062	0.029	0.045	0.17	0.0062	0.011	0.0052
			GSI Human Health Based:	33,000.	36,000.	2,600.	25,000.	370.	13.	690.	0.28	0.13	64.	0.19	210.	0.13	9.4	48.
			Residential Drinking Water:	7.	70.	5.	100.	5.	2.	880.	0.05	0.005	1.	0.004	0.1	0.005	0.1	0.2
			Volatilization to Indoor Air:	1,300.	210,000.	1,400,000.	200,000.	97,000.	13,000.	NL	NL	NL	NL	NL	NL	NL	NL	NL
MW-26	MW26- 100203-01	10/2/03	On-Site	---	---	---	---	---	21	---	---	---	---	---	---	---	---	---
MW-26	MW26- 110403-01	11/4/03	On-Site	---	---	---	---	---	34	12	---	---	---	---	---	---	---	0.02
MW-27	MW27- 122903-01	12/29/03	Off-Site	---	---	---	---	---	---	16	---	---	---	---	---	---	---	0.006
MW-27C	MW-27C- 122903-01	12/29/03	Off-Site	---	---	---	---	---	---	14	---	---	---	---	---	---	---	0.006
MW-28	MW28- 122903-01	12/29/03	Off-Site	---	---	---	---	---	---	12	---	---	---	0.0044	---	---	---	0.007
MW-28C	MW28C- 122903-01	12/29/03	Off-Site	---	---	---	---	---	---	12	---	---	---	---	---	---	---	---
MW-29C	MW29C- 123003-01	12/30/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.008
MW-29C	MW29C- 123003-02	12/30/03	Off-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.006
MW-A2	MWA2- 100303-01	10/3/03	On-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.007
MW-B1	MWB1- 100203-01	10/2/03	On-Site	---	450	---	120	280	250	---	---	---	---	---	0.152	---	---	---
MW-B2	MWB2- 100203-01	10/2/03	On-Site	---	---	---	---	---	38	---	---	---	---	---	---	---	---	---
MW-E2	MWE2- 100303-01	10/3/03	On-Site	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.006
MW-G4	MWG4- 100303-01	10/3/03	On-Site	---	---	---	---	---	2.8	---	---	---	---	---	---	---	---	---
MW-J2	MWJ2- 100203-01	10/2/03	On-Site	---	---	---	---	---	---	---	---	0.0086	---	0.0087	---	0.013	---	---
OE02	OE02-08-10 062703-01	6/27/03	Off-Site	---	---	---	---	50	---	---	---	---	---	---	---	---	---	---
OE03	OE03-0611- 070703-01	7/7/03	Off-Site	---	---	---	---	9.2	---	---	---	---	---	---	---	---	---	---

NOTES:

J - Estimated value.

--- Standards not exceeded.

NL - A standard values was not listed for this compound.

TABLE 2

IN-SITU HYDRAULIC CONDUCTIVITY TEST RESULTS
JCI - FOWLERVILLE

Well ID	Test # (if multiple tests)	Test method	Aquifer Thickness (feet)	Transmissivity (cm2/sec)	Hydraulic Conductivity (cm/sec)	Zone
Summary of Hydraulic Conductivity Results						
		Geometric Mean of all K measurements			**1.12E-03**	Shallow
		Geometric Mean of all K measurements			**3.21E-04**	Intermediate
		Geometric Mean of all K measurements			**4.75E-04**	Deep
Historical Hydraulic Conductivity tests prior to 2003						
MW-A1		Bower&Rice	NA	NA	2.36E-04	Shallow
MW-A3		Bower&Rice	NA	NA	1.02E-03	Shallow
MW-A4		Bower&Rice	NA	NA	4.45E-04	Shallow
MW-B1	#1	Bower&Rice	NA	NA	2.68E-04	Shallow
MW-B1	#2	Bower&Rice	NA	NA	2.26E-04	Shallow
MW-B3	#1	Bower&Rice	NA	NA	3.14E-04	Shallow
MW-B3	#2	Bower&Rice	NA	NA	2.96E-04	Shallow
MW-B3	#3	Bower&Rice	NA	NA	8.68E-04	Shallow
MW-C1		Bower&Rice	NA	NA	3.28E-03	Shallow
MW-E1	#1	Bower&Rice	NA	NA	6.00E-04	Shallow
MW-E1	#2	Bower&Rice	NA	NA	5.93E-04	Shallow
MW-E3	#1	Bower&Rice	NA	NA	8.15E-04	Shallow
MW-E3	#2	Bower&Rice	NA	NA	7.87E-04	Shallow
MW-F1		Bower&Rice	NA	NA	1.62E-03	Shallow
MW-F3		Bower&Rice	NA	NA	4.80E-03	Shallow
MW-F4		Bower&Rice	NA	NA	3.34E-03	Shallow
MW-G1	#1	Bower&Rice	NA	NA	4.48E-04	Shallow
MW-G1	#2	Bower&Rice	NA	NA	4.30E-04	Shallow
MW-G3	#1	Bower&Rice	NA	NA	4.59E-04	Shallow
MW-G3	#2	Bower&Rice	NA	NA	4.02E-04	Shallow
MW-J1		Bower&Rice	NA	NA	2.23E-03	Shallow
MW-L1	#1	Bower&Rice	NA	NA	4.09E-04	Shallow
MW-L1	#2	Bower&Rice	NA	NA	4.41E-04	Shallow
MW-B4	#1	Hvorslev	NA	NA	9.53E-05	Intermediate
MW-B4	#2	Hvorslev	NA	NA	9.88E-05	Intermediate
MW-BCK3	#1	Hvorslev	NA	NA	7.23E-04	Intermediate
MW-BCK3	#2	Hvorslev	NA	NA	7.44E-04	Intermediate
MW-F5	#1	Hvorslev	NA	NA	3.74E-04	Intermediate
MW-F5	#2	Hvorslev	NA	NA	4.23E-04	Intermediate
MW-J3	#1	Hvorslev	NA	NA	3.81E-04	Intermediate
MW-J3	#2	Hvorslev	NA	NA	3.70E-04	Intermediate
MW-A2		Hvorslev	NA	NA	1.48E-04	Deep
MW-B2		Hvorslev	NA	NA	2.43E-04	Deep
MW-C2		Hvorslev	NA	NA	2.61E-04	Deep
MW-E2		Hvorslev	NA	NA	2.18E-03	Deep
MW-F2		Hvorslev	NA	NA	1.28E-03	Deep
MW-G2		Not conducted	NA	NA	Not conducted	Deep
MW-J2		Hvorslev	NA	NA	8.78E-04	Deep
Hydraulic Conductivity tests, 2003						
MW-03	Rising Test #1	Bower&Rice	NA	NA	3.96E-03	Shallow
MW-03	Rising Test #2	Bower&Rice	NA	NA	4.19E-03	Shallow
MW-03	Falling Test #1	Bower&Rice	NA	NA	2.20E-03	Shallow
MW-03	Falling Test #2	Bower&Rice	NA	NA	3.55E-03	Shallow
MW09	Rising Test #1	Bower&Rice	NA	NA	3.22E-03	Shallow
MW-OS1	Rising Test #1	Bower&Rice	NA	NA	4.13E-03	Shallow
MW-OS1	Rising Test #2	Bower&Rice	NA	NA	4.60E-03	Shallow
MW-OS1	Falling Test #1	Bower&Rice	NA	NA	3.93E-03	Shallow

TABLE 2

IN-SITU HYDRAULIC CONDUCTIVITY TEST RESULTS
JCI - FOWLERVILLE

Well ID	Test # (if multiple tests)	Test method	Aquifer Thickness (feet)	Transmissivity (cm2/sec)	Hydraulic Conductivity (cm/sec)	Zone
MW-OS1	Falling Test #2	Bower&Rice	NA	NA	4.05E-03	Shallow
MW-OS3	Rising Test #1	Bower&Rice	NA	NA	2.43E-03	Shallow
MW03C	Rising Test #1	Cooper-Bredehoeft-Papadopulos	50	7.66E-02	5.03E-05	Deep
MW03C	Rising Test #2	Cooper-Bredehoeft-Papadopulos	50	5.77E-02	3.78E-05	Deep
MW03C	Falling Test #1	Cooper-Bredehoeft-Papadopulos	50	2.05E-01	1.35E-04	Deep
MW03C	Falling Test #2	Cooper-Bredehoeft-Papadopulos	50	2.62E-01	1.72E-04	Deep
MW09C	Rising Test #1	Cooper-Bredehoeft-Papadopulos	50	2.65E-01	1.74E-04	Deep
MW09C	Rising Test #2	Cooper-Bredehoeft-Papadopulos	50	2.38E-01	1.56E-04	Deep
MW09C	Falling Test #1	Cooper-Bredehoeft-Papadopulos	50	3.75E-01	2.46E-04	Deep
MW09C	Falling Test #2	Cooper-Bredehoeft-Papadopulos	50	6.15E-01	4.03E-04	Deep
MW-OS1C	Rising Test #1	Cooper-Bredehoeft-Papadopulos	50	3.04E+00	2.00E-03	Deep
MW-OS1C	Rising Test #2	Cooper-Bredehoeft-Papadopulos	50	3.21E+00	2.11E-03	Deep
MW-OS1C	Falling Test #1	Cooper-Bredehoeft-Papadopulos	50	4.02E+00	2.64E-03	Deep
MW-OS1C	Falling Test #2	Cooper-Bredehoeft-Papadopulos	50	2.27E+00	1.49E-03	Deep
MW-OS3C	Rising Test #1	Cooper-Bredehoeft-Papadopulos	50	3.57E-02	2.34E-05	Deep
MW-OS3C	Rising Test #2	Cooper-Bredehoeft-Papadopulos	50	4.66E-02	3.06E-05	Deep
MW-OS3C	Falling Test #1	Cooper-Bredehoeft-Papadopulos	50	9.71E-02	6.37E-05	Deep
MW-OS3C	Falling Test #2	Cooper-Bredehoeft-Papadopulos	50	3.23E-01	2.12E-04	Deep

NOTES:

NA = not applicable for test method.

Only 1 value per well was used in determining the geometric means. If 2 or more values were reported for a well a geometric mean was calculated for that well and used in the overall calculation of the geometric mean for that zone.

TABLE 3

GROUNDWATER ELEVATIONS
JCI - FOWLERVILLE

Well/Staff Gauge Designation	Zones	Water Elevation (MSL) March 4, 2003	Water Elevation (MSL) October 6, 2003	Water Elevation (MSL) October 9, 2003	Water Elevation (MSL) October 13, 2003	Water Elevation (MSL) October 17, 2003	Water Elevation (MSL) October 21, 2003	Water Elevation (MSL) November 3, 2003	Water Elevation (MSL) December 3, 2003	Water Elevation (MSL) December 18, 2003
MW-01	Shallow	NOT INSTALLED	882.83	882.78	882.70	883.36	882.98	883.82	883.68	883.42
MW-02	Shallow	NOT INSTALLED	882.37	882.36	882.36	882.49	882.44	882.82	882.90	882.79
MW-03	Shallow	NOT INSTALLED	882.44	882.42	882.43	882.60	882.51	882.98	883.02	882.91
MW-03C	Deep	NOT INSTALLED	882.48	882.43	882.46	882.61	882.55	882.32	883.01	882.93
MW-04	Shallow	NOT INSTALLED	882.25	882.22	882.23	882.40	882.27	882.94	882.96	882.83
MW-05	Shallow	NOT INSTALLED	882.18	882.17	882.18	882.32	882.26	882.62	882.66	882.58
MW-06	Shallow	NOT INSTALLED	882.31	882.30	882.31	882.42	882.37	882.67	882.79	882.70
MW-07	Shallow	NOT INSTALLED	882.45	882.44	882.39	882.53	882.50	Under Water	882.85	882.80
MW-08	Shallow	NOT INSTALLED	881.01	881.07	881.09	881.14	881.08	881.61	881.51	881.38
MW-09	Shallow	NOT INSTALLED	881.91	881.92	881.96	881.39	882.03	882.33	882.43	882.31
MW-09B	Intermediate	NOT INSTALLED	881.87	881.87	881.92	882.68	881.95	882.30	882.35	882.26
MW-09C	Deep	NOT INSTALLED	881.92	881.78	881.99	881.97	881.94	-	882.41	882.32
MW-10	Shallow	NOT INSTALLED	881.10	881.24	881.29	881.36	881.31	881.65	881.73	881.60
MW-11	Shallow	NOT INSTALLED	881.32	881.35	881.36	881.51	881.36	882.01	881.78	881.63
MW-12	Shallow	NOT INSTALLED	882.54	882.52	882.51	882.58	882.57	Under Water	882.92	-
MW-13	Shallow	NOT INSTALLED	878.53	878.43	878.43	879.02	878.92	880.05	879.88	879.76
MW-13C	Deep	NOT INSTALLED	878.80	878.74	878.68	879.22	879.10	880.12	879.93	879.82
MW-14	Shallow	NOT INSTALLED	878.88	878.76	878.73	879.71	879.10	880.32	879.61	879.58
MW-14C	Deep	NOT INSTALLED	879.09	879.00	878.98	879.07	879.31	880.40	879.88	879.78
MW-15	Shallow	NOT INSTALLED	878.63	878.53	878.52	879.05	878.88	880.11	879.59	879.52
MW-15C	Deep	NOT INSTALLED	879.19	879.13	879.11	879.55	879.42	880.41	880.11	880.04
MW-17	Shallow	NOT INSTALLED	881.01	881.01	881.00	881.12	881.05	881.48	881.49	881.37
MW-18	Shallow	NOT INSTALLED	880.81	881.04	881.11	881.20	881.14	881.50	881.57	881.46
MW-19	Shallow	NOT INSTALLED	882.01	881.05	882.03	882.12	882.10	882.38	882.58	882.43
MW-20	Shallow	NOT INSTALLED	880.27	880.92	879.59	879.95	879.83	880.87	879.91	880.30
MW-21	Shallow	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	879.82
MW-22	Shallow	NOT INSTALLED	878.54	878.54	878.32	878.82	878.56	879.62	878.88	878.97
MW-23	Shallow	NOT INSTALLED	879.18	879.17	878.83	879.48	879.28	880.24	879.90	879.87
MW-24	Shallow	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	880.08	879.67	879.65
MW-25	Shallow	NOT INSTALLED	881.26	881.33	881.35	881.43	881.38	881.79	881.78	881.64
MW-26	Shallow	NOT INSTALLED	880.34	880.81	880.84	879.98	880.91	881.36	881.34	881.25
MW-27	Shallow	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	881.94
MW-27C	Deep	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	881.99
MW-28	Shallow	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	883.81
MW-28C	Deep	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	884.14
MW-29	Shallow	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	882.25
MW-29C	Deep	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	882.21
MW-A1	Shallow	878.94	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-A2	Deep	879.01	879.06	879.03	878.81	879.40	879.21	880.18	Abandoned	Abandoned
MW-A3	Shallow	878.78	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-A4	Shallow	878.86	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-B1	Shallow	881.10	878.78	878.72	878.67	879.14	878.93	879.97	879.52	880.40
MW-B2	Deep	879.42	879.63	879.69	879.61	879.98	879.84	880.70	880.32	880.26
MW-B3	Shallow	880.73	-	-	-	-	-	-	-	-
MW-B4	Intermediate	879.94	880.17	880.30	880.22	880.46	880.37	881.02	880.80	880.74
MW-BCK1	Shallow	881.98	882.33	882.31	882.31	882.40	882.36	882.59	882.72	882.66
MW-BCK2	Deep	881.96	881.91	881.91	881.87	882.40	881.92	882.59	882.30	882.24
MW-BCK3	Intermediate	881.90	882.73	882.70	882.71	882.34	882.76	882.55	883.13	883.05
MW-C1	Shallow	-	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-C2	Deep	880.28	880.60	880.72	880.69	880.90	880.81	881.35	881.24	881.14
MW-C3	Shallow	-	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned

TABLE 3

GROUNDWATER ELEVATIONS
JCI - FOWLERVILLE

Well/Staff Gauge Designation	Zones	Water Elevation (MSL) March 4, 2003	Water Elevation (MSL) October 6, 2003	Water Elevation (MSL) October 9, 2003	Water Elevation (MSL) October 13, 2003	Water Elevation (MSL) October 17, 2003	Water Elevation (MSL) October 21, 2003	Water Elevation (MSL) November 3, 2003	Water Elevation (MSL) December 3, 2003	Water Elevation (MSL) December 18, 2003
MW-E1	Shallow	879.28	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-E2	Deep	877.52	879.51	879.57	879.41	879.89	879.72	880.54	880.28	880.26
MW-E3	Shallow	878.86	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-F1	Shallow	878.59	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-F2	Deep	879.05	879.09	879.06	878.93	879.44	879.29	880.14	879.96	879.87
MW-F3	Shallow	878.44	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-F4	Shallow	878.61	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-F5	Intermediate	878.70	881.19	881.12	880.97	881.55	881.35	882.35	881.94	881.90
MW-G1	Shallow	879.30	Not accessible	879.64	879.44	880.27	880.00	881.02	880.47	880.33
MW-G2	Deep	879.98	Not accessible	880.21	880.07	880.51	880.41	880.96	880.97	880.87
MW-G3	Shallow	879.19	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-G4	Shallow	881.90	Not accessible	882.19	882.18	882.88	882.24	882.48	882.59	882.53
MW-J1	Shallow	880.50	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-J2	Deep	879.80	879.48	879.54	879.39	879.61	879.69	880.51	880.25	880.22
MW-J3	Intermediate	879.05	879.46	879.53	879.44	880.13	879.72	880.55	880.27	880.22
MW-J4	Shallow	-	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-K1	Shallow	-	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-L1	Shallow	882.77	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned	Abandoned
MW-OS1	Shallow	-	878.51	878.35	878.38	878.94	878.76	879.86	879.43	879.37
MW-OS1C	Deep	-	878.90	878.87	878.75	879.30	879.14	880.11	879.77	879.71
MW-OS3	Shallow	-	878.56	878.44	878.44	879.02	878.87	880.09	879.68	879.58
MW-OS3C	Deep	-	878.68	878.59	878.57	879.13	878.98	880.10	879.70	879.64
OW-16	Shallow	-	Not accessible	879.55	879.60	Sampled 10-17-03	874.33	876.63	878.36	879.17
SG-2	Shallow	-	Not accessible	878.46	878.38	878.86	878.67	879.86	877.89	879.06
SG-4	Shallow	-	Not accessible	876.95	876.89	877.38	877.2	878.29	877.40	878.83
SG-5	Shallow	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	879.11	879.06
SG-6	Shallow	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	NOT INSTALLED	881.26	881.17

NOTES:
Shaded cells indicate water level unreliable due to recent water sampling, excavations, etc.
- - indicates water level was not taken
The October 21, 2003 SG-4 water level was estimated from the average difference between SG-2 and SG-4 from October 9, 13, 17, and Noverember 3, 2003

A

APPENDIX A

GROUNDWATER LABORATORY RESULTS

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-01	MW-01	MW-01	MW-02	MW-02	MW-03	MW-03	MW-03C	MW-03C	MW-04	MW-04	MW-05	MW-05	MW-06	MW-06	MW-06	MW-07	MW-07
		Field ID:	MW01-090903-01	MW01-090903-02	MW01-110503-01	MW02-090903-01	EW-14-110603-01	MW03-090903-01	MW03-110603-01	MW03C-093003-01	MW03C-110603-01	MW04-090903-01	MW04-110503-01	MW05-090903-01	MW05-110503-01	MW06-091003-01	MW06-110503-01	MW06-110503-02	MW07-091003-01	MW07-110503-01
		Date Sampled:	9/9/03	9/9/03	11/5/03	9/9/03	11/6/03	9/9/03	11/6/03	9/30/03	11/6/03	9/9/03	11/5/03	9/9/03	11/5/03	9/10/03	11/5/03	11/5/03	9/10/03	11/5/03
Parameter	**CAS #**	**Units**																		
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,1,1-Trichloroethane	71-55-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,1-Dichloroethane	75-34-3	ug/l	48 J	48 J	31 J	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	3.2 J	2.9 J	2.6 J	1 U	1 U
1,1-Dichloroethene	75-35-4	ug/l	14 J	50 U	50 U	8.1 J	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,1-Dichloropropylene	563-58-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,2,3-Trichlorobenzene	87-61-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,2,3-Trichloropropane	96-18-4	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	250 U	250 U	250 U	130 U	130 U	50 U	50 U	5 U	5 U	5 U	5 U	250 U	250 U	50 U	25 U	25 U	5 U	5 U
1,2,4-Trimethylbenzene	95-63-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	0.17 J	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,2-Dichlorobenzene	95-50-1	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,2-Dichloroethane	107-06-2	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,2-Dichloropropane	78-87-5	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,3-Dichloropropane	142-28-9	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
2,2-Dichloropropane	594-20-7	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
2-Chlorotoluene	95-49-8	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
2-Hexanone	591-78-6	ug/l	2500 U	2500 U	2500 U	1300 U	1300 U	500 U	500 U	50 U	50 U	50 U	50 U	2500 U	2500 U	500 U	250 U	250 U	50 U	50 U
4-Chlorotoluene	106-43-4	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
4-Isopropyltoluene	99-87-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
4-Methyl-2-pentanone	108-10-1	ug/l	2500 U	2500 U	2500 U	1300 U	1300 U	500 U	500 U	50 U	50 U	50 U	50 U	2500 U	2500 U	500 U	250 U	250 U	50 U	50 U
Acetone	67-64-1	ug/l	190 J	180 J	1300 U	130 J	630 U	250 U	250 U	25 U	25 U	2.4 J	25 U	200 J	1300 U	39 J	130 U	130 U	25 U	25 U
Benzene	71-43-2	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Bromobenzene	108-86-1	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Bromochloromethane	74-97-5	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Bromoform	75-25-2	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Bromomethane	74-83-9	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Carbon disulfide	75-15-0	ug/l	9.3 J	250 U	250 U	130 U	130 U	50 U	50 U	3.2 J	0.26 J	5 U	5 U	250 U	250 U	50 U	25 U	25 U	5 U	5 U
Carbon tetrachloride	56-23-5	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Chlorobenzene	108-90-7	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Chloroethane	75-00-3	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Chloroform	67-66-3	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Chloromethane	74-87-3	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	ug/l	900	910	600	250	250	65	140	1 U	1 U	1 U	1 U	260	310	100	91	71	1 U	1 U
cis-1,3-Dichloropropene	10061-01-5	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Dibromochloromethane	124-48-1	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Dibromomethane	74-95-3	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Dichlorobromomethane	75-27-4	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Dichlorodifluoromethane	75-71-8	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Ethylbenzene	100-41-4	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Ethylene dibromide	106-93-4	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Hexachlorobutadiene	87-68-3	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Isopropylbenzene	98-82-8	ug/l	250 U	250 U	250 U	130 U	130 U	50 U	50 U	5 U	5 U	5 U	5 U	250 U	250 U	50 U	25 U	25 U	5 U	5 U
Methyl ethyl ketone	78-93-3	ug/l	84 J	80 J	150 J	59 J	630 U	28 J	52 J	25 U	25 U	25 U	25 U	110 J	250 J	21 J	22 J	130 U	25 U	25 U
Methyl tert butyl ether	1634-04-4	ug/l	250 U	250 U	250 U	130 U	130 U	50 U	50 U	5 U	5 U	5 U	5 U	250 U	250 U	50 U	25 U	25 U	5 U	5 U
Methylene chloride	75-09-2	ug/l	46 J	40 J	75 J	35 J	11 J	11 J	10 J	5 U	0.26 J	5 U	0.38 J	48 J	66 J	10 J	6.9 J	5.6 J	5 U	0.36 J
n-Butylbenzene	104-51-8	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
n-Propylbenzene	103-65-1	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Naphthalene	91-20-3	ug/l	250 U	250 U	250 U	130 U	130 U	50 U	50 U	5 U	5 U	5 U	5 U	250 U	250 U	50 U	25 U	25 U	5 U	5 U
o-Xylene	95-47-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
sec-Butylbenzene	135-98-8	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Styrene	100-42-5	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
tert-Butylbenzene	98-06-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Tetrachloroethene	127-18-4	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

Location ID:			MW-01	MW-01	MW-01	MW-02	MW-02	MW-03	MW-03	MW-03C	MW-03C	MW-04	MW-04	MW-05	MW-05	MW-06	MW-06	MW-06	MW-07	MW-07
Field ID:			MW01-090903-01	MW01-090903-02	MW01-110503-01	MW02-090903-01	EW-14-110603-01	MW03-090903-01	MW03-110603-01	MW03C-093003-01	MW03C-110603-01	MW04-090903-01	MW04-110503-01	MW05-090903-01	MW05-110503-01	MW06-091003-01	MW06-110503-01	MW06-110503-02	MW07-091003-01	MW07-110503-01
Date Sampled:			9/9/03	9/9/03	11/5/03	9/9/03	11/6/03	9/9/03	11/6/03	9/30/03	11/6/03	9/9/03	11/5/03	9/9/03	11/5/03	9/10/03	11/5/03	11/5/03	9/10/03	11/5/03
Parameter	CAS #	Units																		
Toluene	108-88-3	ug/l	50 U	14 J	50 U	25 U	25 U	4.6 J	10 U	1 U	1 U	1 U	1 U	17 J	50 U	5.2 J	5 U	5 U	1 U	1 U
trans-1,2-Dichloroethylene	156-60-5	ug/l	28 J	20 J	21 J	19 J	20 J	30	49	1 U	1 U	1 U	1 U	24 J	21 J	48	39	24	1 U	1 U
trans-1,3-Dichloropropene	10061-02-6	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Trichloroethene	79-01-6	ug/l	4200	4200	2900	3900	3400	880	1300	1 U	1 U	2.3	1 U	4200	2100	820	590	340	1 U	1 U
Trichlorofluoromethane	75-69-4	ug/l	50 U	50 U	50 U	25 U	25 U	10 U	10 U	1 U	1 U	1 U	1 U	50 U	50 U	10 U	5 U	5 U	1 U	1 U
Vinyl chloride	75-01-4	ug/l	42 J	51	21 J	46	28	12	12	1 U	1 U	1 U	1 U	50 U	50 U	7.5 J	4.8 J	3.1 J	1 U	1 U
Xylene, Meta + Para	Not Applicable	ug/l	100 U	100 U	100 U	50 U	50 U	20 U	20 U	2 U	2 U	2 U	2 U	100 U	100 U	20 U	10 U	10 U	2 U	2 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	95-95-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	88-06-2	ug/l	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
2,4-Dichlorophenol	120-83-2	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	105-67-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	51-28-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	121-14-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	606-20-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	91-58-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	95-57-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	91-57-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylphenol	95-48-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitroaniline	88-74-4	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	88-75-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3-Dichlorobenzidine	91-94-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline	99-09-2	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	534-52-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl-phenylether	101-55-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloroaniline	106-47-8	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Chlorophenyl-phenylether	7005-72-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	106-44-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitroaniline	100-01-6	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Nitrophenol	100-02-7	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	83-32-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	208-96-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	120-12-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benz(a)anthracene	56-55-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzidine	92-87-5	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Benzo(a)pyrene	50-32-8	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Benzo(b)fluoranthene	205-99-2	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Benzo(g,h,i)perylene	191-24-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	207-08-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzoic acid	65-85-0	ug/l	50 U	50 U	0.64 J	50 U	50 U	50 U	0.2 J	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	0.78 J
Benzyl alcohol	100-51-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	0.12 J
bis(2-Chloroethoxy)methane	111-91-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethyl)ether	111-44-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroisopropyl)ether	108-60-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	0.64 J	0.37	0.32 J	0.59	5 U	0.45	5 U	0.33 J	5 U	0.51	0.46 J	0.65	0.39 J	0.47 J	5 U	5 U	0.47 J	2.2 J
Butyl benzyl phthalate	85-68-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbazole	86-74-8	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	218-01-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Di-N-Butyl phthalate	84-74-2	ug/l	5 U	5 U	0.78 J	5 U	5 U	5 U	5 U	0.84 J	5 U	5 U	2.7 J	2.1	0.75 J	5 U	5 U	0.93 J	5 U	0.86 J
Di-N-Octyl phthalate	117-84-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenz(a,h)anthracene	53-70-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Dibenzofuran	132-64-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethylphthalate	84-66-2	ug/l	5 U	5 U	5 U	5 U	0.15 J	5 U	0.15 J	0.093 J	0.13 J	5 U	0.23 J	0.17	0.2 J	0.32 J	0.15 J	0.19 J	0.32 J	0.24 J
Dimethyl phthalate	131-11-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.088 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-01	MW-01	MW-01	MW-02	MW-02	MW-03	MW-03	MW-03C	MW-03C	MW-04	MW-04	MW-05	MW-05	MW-06	MW-06	MW-06	MW-07	MW-07
		Field ID:	MW01-090903-01	MW01-090903-02	MW01-110503-01	MW02-090903-01	EW-14-110603-01	MW03-090903-01	MW03-110603-01	MW03C-093003-01	MW03C-110603-01	MW04-090903-01	MW04-110503-01	MW05-090903-01	MW05-110503-01	MW06-091003-01	MW06-110503-01	MW06-110503-02	MW07-091003-01	MW07-110503-01
		Date Sampled:	9/9/03	9/9/03	11/5/03	9/9/03	11/6/03	9/9/03	11/6/03	9/30/03	11/6/03	9/9/03	11/5/03	9/9/03	11/5/03	9/10/03	11/5/03	11/5/03	9/10/03	11/5/03
Parameter	CAS #	Units																		
Fluorene	86-73-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobenzene	118-74-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Isophorone	78-59-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitroso-di-N-propylamine	621-64-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	86-30-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	91-20-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Nitrobenzene	98-95-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
p-Chloro-m-cresol	59-50-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.2	5 U	5 U	5 U	5 U	5 U	5 U
Pentachlorophenol	87-86-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Phenanthrene	85-01-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.19 J
Phenol	108-95-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pyrene	129-00-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
PCB-1016	12674-11-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1221	11104-28-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1232	11141-16-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1242	53469-21-9	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1248	12672-29-6	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1254	11097-69-1	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1260	11096-82-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Arsenic, Total	7440-38-2	mg/l	0.0099	0.0099	0.0071	0.011	0.009	0.011	0.0085	0.0028	0.0044	0.0037	0.0062	0.0009	0.00075 J	0.018	0.0071	0.0068	0.0071	0.0067
Barium, Total	7440-39-3	mg/l	0.229	0.237	0.218	0.263	0.19	0.258	0.327	0.183	0.181	0.104	0.174	0.107	0.152	0.121	0.143	0.134	0.138	0.155
Cadmium, Total	7440-43-9	mg/l	0.0002 U	0.0002 U	0.0002	0.0002 U	0.0003	0.00009	0.0002	0.0002 U	0.0002 U	0.00007	0.0002	0.0002 U	0.0001 J	0.0002 U	0.00009 J	0.0001 J	0.0002 U	0.0002 U
Chromium, Total	7440-47-3	mg/l	0.0011 J	0.0006	0.0011 J	0.0008	0.0011 J	0.001	0.0016 J	0.005 U	0.0011 J	0.001	0.0017 J	0.0014	0.0014 J	0.0007 J	0.001 J	0.0011 J	0.0005 J	0.0013 J
Copper, Total	7440-50-8	mg/l	0.0007	0.0012	0.0009 J	0.0014	0.001 J	0.0024	0.0024 J	0.0008 J	0.0011 J	0.0039	0.002 J	0.0023	0.0023 J	0.0011 J	0.0008 J	0.0009 J	0.0007 J	0.0012 J
Lead, Total	7439-92-1	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0004	0.00022 J	0.001 U	0.001 U	0.00023	0.001 U	0.001 U	0.001 U	0.0004 J	0.001 U	0.001 U	0.0005 J	0.0004 J
Mercury, Total	7439-97-6	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel, Total	7440-02-0	mg/l	0.0014 J	0.0022	0.001 J	0.0012	0.0015 J	0.0043	0.0028 J	0.0035 J	0.0032 J	0.0053	0.0048 J	0.0054	0.0048 J	0.0043 J	0.0012 J	0.0047 J	0.0008 J	0.0015 J
Selenium, Total	7782-49-2	mg/l	0.0008	0.0005	0.001 U	0.001 U	0.001 U	0.0006	0.001 U	0.001 U	0.001 U	0.002	0.001 U	0.0007	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Silver, Total	7440-22-4	mg/l	0.00008	4.5e-005 J	0.0002 U	0.0002 U	0.00006 J	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00005	0.00007 J	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Zinc, Total	7440-66-6	mg/l	0.005 J	0.018	0.0079 J	0.0033	0.0075 J	0.0094	0.0099 J	0.0049 J	0.0079 J	0.017	0.014	0.0055	0.0095 J	0.042	0.006 J	0.0091 J	0.017	0.0061 J
Arsenic, Dissolved	7440-38-2	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Barium, Dissolved	7440-39-3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium, Dissolved	7440-43-9	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chromium, Dissolved	7440-47-3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chromium, Hexavalent- Dissolve	18540-29-9	mg/l	0.002 J	0.002 J	0.003 J	0.003 J	0.007	0.003 J	0.004 J	0.0008 J	0.006	0.001 J	0.002 J	0.0007 J	0.005 U	0.004 J	0.002 J	0.002 J	0.004 J	0.002 J
Copper, Dissolved	7440-50-8	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lead, Dissolved	7439-92-1	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mercury, Dissolved	7439-97-6	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nickel, Dissolved	7440-02-0	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Selenium, Dissolved	7782-49-2	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Silver, Dissolved	7440-22-4	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Zinc, Dissolved	7440-66-6	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cyanide, Free	57-12-5	mg/l	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.004	0.005 U	0.005 U	0.005 U	0.005 U	0.005	0.005 U	0.0024	0.005	0.005 U	0.004
Cyanide, Total	57-12-5	mg/l	0.005 U	0.005 U	---	0.005 U	---	0.005 U	---	---	---	0.005 U	---	0.005 U	---	0.005 U	---	---	0.005 U	---

NOTES:
U = Non-detect, value is reporting limit
J = Estimated, value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-08	MW-08	MW-09	MW-09	MW-09B	MW-09B	MW-09C	MW-09C	MW-09C	MW-0S1	MW-0S1	MW-0S1C	MW-0S1C	MW-0S1C	MW-0S3	MW-0S3	MW-0S3	MW-0S3C
		Field ID:	MW08-100203-01	MW08-110403-01	MW09-100103-01	MW09-110503-01	MW09B-100103-01	MW09B-110603-01	MW09C-100103-01	MW09C-100103-02	MW09C-110603-01	MW051-100303-01	MW-0S1-110403-01	MW051C-091103-01	MW051C-100303-01	MW-0S1C-110403-01	MW-0S3-110603-01	MW-0S3-110603-02	MW053-100303-01	MW053C-091003-01
		Date Sampled:	10/2/03	11/4/03	10/1/03	11/5/03	10/1/03	11/6/03	10/1/03	10/1/03	11/6/03	10/3/03	11/4/03	9/11/03	10/3/03	11/4/03	11/6/03	11/6/03	10/3/03	9/10/03
Parameter	CAS #	Units																		
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	71-55-6	ug/l	2 U	1 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	ug/l	14	18	0.58 J	0.22 J	1 U	1 U	1 U	1 U	1 U	0.6 J	0.52 J	1 U	---	1 U	3.5	3.6	4	1 U
1,1-Dichloroethene	75-35-4	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropylene	563-58-6	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	87-61-6	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	96-18-4	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	95-63-6	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	0.21 J	0.12 J	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	95-50-1	ug/l	2 U	2.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	142-28-9	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	594-20-7	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	95-49-8	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
2-Hexanone	591-78-6	ug/l	100 U	100 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---	50 U	50 U	50 U	50 U	50 U
4-Chlorotoluene	106-43-4	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene	99-87-6	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	108-10-1	ug/l	100 U	100 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---	50 U	50 U	50 U	50 U	50 U
Acetone	67-64-1	ug/l	50 U	50 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	---	25 U	25 U	25 U	25 U	25 U
Benzene	71-43-2	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Bromobenzene	108-86-1	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	74-97-5	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	75-15-0	ug/l	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	0.2 J	5 U	5 U	5 U	5 U
Carbon tetrachloride	56-23-5	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Chloroform	67-66-3	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	ug/l	280	320	55	19	1 U	1 U	1 U	1 U	1 U	1.4	1.2	1 U	---	1 U	13	13	27	1 U
cis-1,3-Dichloropropene	10061-01-5	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	124-48-1	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Dibromomethane	74-95-3	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Dichlorobromomethane	75-27-4	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	75-71-8	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.12 J	1 U	---	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide	106-93-4	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	87-68-3	ug/l	10 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	---	1 U	1 U	1 U	5 U	1 U
Isopropylbenzene	98-82-8	ug/l	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Methyl ethyl ketone	78-93-3	ug/l	50 U	10 J	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	---	25 U	25 U	25 U	25 U	25 U
Methyl tert butyl ether	1634-04-4	ug/l	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Methylene chloride	75-09-2	ug/l	10 U	2.8 J	5 U	0.23 J	5 U	0.3 J	5 U	5 U	0.32 J	5 U	0.32 J	5 U	---	0.42 J	0.31 J	0.25 J	5 U	5 U
n-Butylbenzene	104-51-8	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	103-65-1	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Naphthalene	91-20-3	ug/l	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
o-Xylene	95-47-6	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	135-98-8	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Styrene	100-42-5	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	98-06-6	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-08	MW-08	MW-09	MW-09	MW-09B	MW-09B	MW-09C	MW-09C	MW-09C	MW-0S1	MW-0S1	MW-0S1C	MW-0S1C	MW-0S1C	MW-0S3	MW-0S3	MW-0S3	MW-0S3C
		Field ID:	MW08-100203-01	MW08-110403-01	MW09-100103-01	MW09-110503-01	MW09B-100103-01	MW09B-110603-01	MW09C-100103-01	MW09C-100103-02	MW09C-110603-01	MW051-100303-01	MW-0S1-110403-01	MW051C-091103-01	MW051C-100303-01	MW-0S1C-110403-01	MW-0S3-110603-01	MW-0S3-110603-02	MW053-100303-01	MW053C-091003-01
		Date Sampled:	10/2/03	11/4/03	10/1/03	11/5/03	10/1/03	11/6/03	10/1/03	10/1/03	11/6/03	10/3/03	11/4/03	9/11/03	10/3/03	11/4/03	11/6/03	11/6/03	10/3/03	9/10/03
Parameter	CAS #	Units																		
Toluene	108-88-3	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.16 J	1 U	---	0.13 J	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethylene	156-60-5	ug/l	22	26	28	9.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1.3	1.2	1.7	1 U
trans-1,3-Dichloropropene	10061-02-6	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	ug/l	3	2.3	1 U	1 U	1 U	0.3 J	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	0.72 J
Trichlorofluoromethane	75-69-4	ug/l	2 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	75-01-4	ug/l	140	130	9.5	2.9	1 U	1 U	1 U	1 U	1 U	0.73 J	0.63 J	1 U	---	1 U	27	29	24	1 U
Xylene, Meta + Para	Not Applicable	ug/l	4 U	4 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	95-50-1	ug/l	1.8	1.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.036 J	1 U	---	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	0.22 J	0.13 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	95-95-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	88-06-2	ug/l	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	---	4 U	4 U	4 U	4 U	4 U
2,4-Dichlorophenol	120-83-2	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	105-67-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	51-28-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	121-14-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	606-20-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	91-58-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	95-57-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	91-57-6	ug/l	1.6 J	1.3 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
2-Methylphenol	95-48-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
2-Nitroaniline	88-74-4	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	88-75-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
3,3-Dichlorobenzidine	91-94-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline	99-09-2	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	534-52-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl-phenylether	101-55-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
4-Chloroaniline	106-47-8	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
4-Chlorophenyl-phenylether	7005-72-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	106-44-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
4-Nitroaniline	100-01-6	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
4-Nitrophenol	100-02-7	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
Acenaphthene	83-32-9	ug/l	5 U	0.043 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	208-96-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Anthracene	120-12-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Benz(a)anthracene	56-55-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
Benzidine	92-87-5	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---	50 U	50 U	50 U	50 U	50 U
Benzo(a)pyrene	50-32-8	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U	2 U	2 U
Benzo(b)fluoranthene	205-99-2	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U	2 U	2 U
Benzo(g,h,i)perylene	191-24-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	207-08-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Benzoic acid	65-85-0	ug/l	50 U	0.26 J	50 U	0.82 J	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---	50 U	50 U	50 U	50 U	50 U
Benzyl alcohol	100-51-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---	50 U	50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)methane	111-91-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethyl)ether	111-44-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroisopropyl)ether	108-60-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	3.9 J	0.79 J	0.63 J	0.56 J	0.58 J	5 U	0.7 J	0.61 J	0.48 J	0.49 J	0.65 J	0.37 J	---	5 U	0.49 J	5 U	0.28 J	0.39 J
Butyl benzyl phthalate	85-68-7	ug/l	0.34 J	5 U	0.057 J	5 U	0.056 J	5 U	0.071 J	5 U	5 U	0.14 J	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Carbazole	86-74-8	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---	10 U	10 U	10 U	10 U	10 U
Chrysene	218-01-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Di-N-Butyl phthalate	84-74-2	ug/l	1.2 J	0.74 J	1.7 J	1.2 J	0.48 J	5 U	0.58 J	0.86 J	5 U	0.34 J	12	5 U	---	5 U	1.2 J	5 U	0.25 J	5 U
Di-N-Octyl phthalate	117-84-0	ug/l	0.17 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.052 J	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Dibenz(a,h)anthracene	53-70-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U	2 U	2 U
Dibenzofuran	132-64-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Diethylphthalate	84-66-2	ug/l	0.52 J	0.22 J	0.12 J	0.31 J	0.12 J	0.15 J	0.1 J	0.1 J	0.13 J	0.056 J	0.2 J	0.19 J	---	0.16 J	0.21 J	0.14 J	5 U	0.28 J
Dimethyl phthalate	131-11-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	0.11 J	0.12 J	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U

		Location ID:	MW-08	MW-08	MW-09	MW-09	MW-09B	MW-09B	MW-09C	MW-09C	MW-09C	MW-0S1	MW-0S1	MW-0S1C	MW-0S1C	MW-0S1C	MW-0S3	MW-0S3	MW-0S3	MW-0S3C
		Field ID:	MW08-100203-01	MW08-110403-01	MW09-100103-01	MW09-110503-01	MW09B-100103-01	MW09B-110603-01	MW09C-100103-01	MW09C-100103-02	MW09C-110603-01	MW051-100303-01	MW-0S1-110403-01	MW051C-091103-01	MW051C-100303-01	MW-0S1C-110403-01	MW-0S3-110603-01	MW-0S3-110603-02	MW053-100303-01	MW053C-091003-01
		Date Sampled:	10/2/03	11/4/03	10/1/03	11/5/03	10/1/03	11/6/03	10/1/03	10/1/03	11/6/03	10/3/03	11/4/03	9/11/03	10/3/03	11/4/03	11/6/03	11/6/03	10/3/03	9/10/03
Parameter	CAS #	Units																		
Fluorene	86-73-7	ug/l	0.053 J	0.047 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Hexachlorobenzene	118-74-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U	2 U	2 U
Isophorone	78-59-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
N-Nitroso-di-N-propylamine	621-64-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	86-30-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Naphthalene	91-20-3	ug/l	5 U	0.16 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Nitrobenzene	98-95-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U	2 U	2 U
p-Chloro-m-cresol	59-50-7	ug/l	1.2 J	5 U	5 U	5 U	1.3 J	5 U	5 U	5 U	5 U	0.34 J	5 U	5 U	---	5 U	5 U	5 U	0.27 J	5 U
Pentachlorophenol	87-86-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U	20 U	20 U
Phenanthrene	85-01-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Phenol	108-95-2	ug/l	5 U	0.037 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
Pyrene	129-00-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U	5 U	5 U
PCB-1016	12674-11-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1221	11104-28-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1232	11141-16-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1242	53469-21-9	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1248	12672-29-6	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.068 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.13 J
PCB-1254	11097-69-1	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1260	11096-82-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Arsenic, Total	7440-38-2	mg/l	0.0054	0.0058	0.005	0.0058	0.0055	0.0065	0.005	0.0051	0.0056	0.003	0.0043	0.0026	---	0.0029	0.0062	0.0063	0.0053	0.0031
Barium, Total	7440-39-3	mg/l	0.183	0.21	0.215	0.222	0.131	0.134	0.075	0.074	0.07	0.129	0.137	0.085	---	0.062	0.204	0.209	0.204	0.076
Cadmium, Total	7440-43-9	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0006	0.0002 U	0.0002	0.0002 U	0.0002 U	0.0002 U	8e-005 J	0.0001 J	0.0002 U	---	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0001 J
Chromium, Total	7440-47-3	mg/l	0.002 J	0.0017 J	0.005 U	0.0015 J	0.005 U	0.001 J	0.0006 J	0.005 U	0.001 J	0.0018 J	0.0013 J	0.005 U	---	0.0009 J	0.001 J	0.0008 J	0.0005 J	0.0008 J
Copper, Total	7440-50-8	mg/l	0.181	0.148	0.0008 J	0.0017 J	0.005 U	0.005 U	0.0009 J	0.005 U	0.0015 J	0.0012 J	0.0041 J	0.0016	---	0.0043 J	0.0026 J	0.0015 J	0.0014 J	0.004 J
Lead, Total	7439-92-1	mg/l	0.001 U	0.001 U	0.001 U	0.0003 J	0.001 U	0.001 U	0.001 U	0.0004 J	0.001 U	0.0005 J	0.0005 J	0.0034	---	0.001 U	0.001 U	0.00022 J	0.001 U	0.001 U
Mercury, Total	7439-97-6	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel, Total	7440-02-0	mg/l	0.14	0.184	0.0067	0.0059	0.0038 J	0.0036 J	0.0029 J	0.0029 J	0.0035 J	0.002 J	0.012	0.0076	---	0.003 J	0.0021 J	0.002 J	0.0013 J	0.0025 J
Selenium, Total	7782-49-2	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	---	0.001 U	0.001 U	0.001 U	0.0008 J	0.001 U
Silver, Total	7440-22-4	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---	0.0002 U	0.00008 J	0.0002 U	0.0002 U	0.0002 U
Zinc, Total	7440-66-6	mg/l	0.092	0.104	0.011	0.023	0.0057 J	0.0081 J	0.0054 J	0.0054 J	0.017	0.007 J	0.0068 J	0.033	---	0.005 J	0.058	0.0079 J	0.0035 J	0.0097 J
Arsenic, Dissolved	7440-38-2	mg/l	---	---	---	0.005	---	---	---	---	---	---	0.0024	---	---	---	---	---	---	---
Barium, Dissolved	7440-39-3	mg/l	---	---	---	0.211	---	---	---	---	---	---	0.128	---	---	---	---	---	---	---
Cadmium, Dissolved	7440-43-9	mg/l	---	---	---	0.0002 U	---	---	---	---	---	---	0.0001 J	---	---	---	---	---	---	---
Chromium, Dissolved	7440-47-3	mg/l	---	---	---	0.0015 J	---	---	---	---	---	---	0.005 U	---	---	---	---	---	---	---
Chromium, Hexavalent- Dissolve	18540-29-9	mg/l	0.009	0.02	0.005	0.005	0.0009 J	0.005	0.005 U	0.0007 J	0.002 J	0.002 J	0.003 J	0.005 U	---	0.002 J	0.01	0.01	0.004 J	0.005 U
Copper, Dissolved	7440-50-8	mg/l	---	---	---	0.0012 J	---	---	---	---	---	---	0.005 U	---	---	---	---	---	---	---
Lead, Dissolved	7439-92-1	mg/l	---	---	---	0.001 U	---	---	---	---	---	---	0.001 U	---	---	---	---	---	---	---
Mercury, Dissolved	7439-97-6	mg/l	---	---	---	0.0002 U	---	---	---	---	---	---	0.0002 U	---	---	---	---	---	---	---
Nickel, Dissolved	7440-02-0	mg/l	---	---	---	0.006	---	---	---	---	---	---	0.0042 J	---	---	---	---	---	---	---
Selenium, Dissolved	7782-49-2	mg/l	---	---	---	0.001 U	---	---	---	---	---	---	0.001 U	---	---	---	---	---	---	---
Silver, Dissolved	7440-22-4	mg/l	---	---	---	0.0002 U	---	---	---	---	---	---	0.0002 U	---	---	---	---	---	---	---
Zinc, Dissolved	7440-66-6	mg/l	---	---	---	0.16	---	---	---	---	---	---	0.025	---	---	---	---	---	---	---
Cyanide, Free	57-12-5	mg/l	0.03	0.04	0.01	0.01	0.005 U	0.004	0.005 U	0.004	0.005 U	0.007	0.007	0.005 U	---	0.004	0.004	0.005 U	0.006	0.005 U
Cyanide, Total	57-12-5	mg/l	---	---	---	---	---	---	---	---	---	---	---	0.005 U	---	---	---	---	---	0.005 U

NOTES:
U = Non-detect, value is reporting limit
J = Estimated, value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-0S3C	MW-0S3C	MW-0S3C	MW-10	MW-10	MW-11	MW-11	MW-12	MW-13	MW-13	MW-13C	MW-13C	MW-13C	MW-14	MW-14	MW-14	MW-14C	MW-14C
		Field ID:	MW053C-100303-01	MW-0S3C- 110503-01	MW-0S3C-110503-02	MW10-100103-01	MW10-110503-01	MW11-091003-01	MW11-110503-01	MW12-091003-01	MW-13-091103-01	MW-13-110403-01	MW13C-091103-01	MW-13C-110403-01	MW-13C 110403-02	MW14-093003-01	MW14-100603-01	MW14-110503-01	MW14C-093003-01	MW14C-110503-01
		Date Sampled:	10/3/03	11/5/03	11/5/03	10/1/03	11/5/03	9/10/03	11/5/03	9/10/03	9/11/03	11/4/03	9/11/03	11/4/03	11/4/03	9/30/03	10/6/03	11/5/03	9/30/03	11/5/03
Parameter	**CAS #**	**Units**																		
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	71-55-6	ug/l	1 U	1 U	1 U	1 U	1 U	0.65 J	0.71 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	ug/l	1 U	1 U	1 U	1 U	1 U	0.47 J	1.3	1 U	1 U	1 U	1 U	1 U	1 U	3.4	3.3	0.76 J	1 U	1 U
1,1-Dichloroethene	75-35-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropylene	563-58-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	87-61-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	96-18-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	95-63-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	142-28-9	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	594-20-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	95-49-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	591-78-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4-Chlorotoluene	106-43-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene	99-87-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	108-10-1	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Acetone	67-64-1	ug/l	25 U	25 U	25 U	25 U	25 U	2.5 J	25 U	1.7 J	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Benzene	71-43-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	108-86-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	74-97-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	75-15-0	ug/l	5 U	0.24 J	0.32 J	5 U	5 U	5 U	5 U	5 U	5 U	0.18 J	5 U	0.39 J	0.42 J	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	56-23-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	ug/l	1 U	1 U	1 U	1 U	1 U	0.26 J	0.42 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	67-66-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	ug/l	1 U	1 U	1 U	36	60	8.3	6.4	1 U	1 U	1 U	1 U	1 U	1 U	33	33	5.9	1 U	1 U
cis-1,3-Dichloropropene	10061-01-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	124-48-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	74-95-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorobromomethane	75-27-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	75-71-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide	106-93-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	87-68-3	ug/l	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	98-82-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl ethyl ketone	78-93-3	ug/l	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Methyl tert butyl ether	1634-04-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	75-09-2	ug/l	5 U	0.41 J	0.49 J	5 U	0.3 J	5 U	0.46 J	5 U	5 U	0.44 J	5 U	0.39 J	0.32 J	5 U	5 U	0.41 J	5 U	0.5 J
n-Butylbenzene	104-51-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	103-65-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	91-20-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
o-Xylene	95-47-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	135-98-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	100-42-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	98-06-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-0S3C	MW-0S3C	MW-0S3C	MW-10	MW-10	MW-11	MW-11	MW-12	MW-13	MW-13	MW-13C	MW-13C	MW-13C	MW-14	MW-14	MW-14	MW-14C	MW-14C
		Field ID:	MW053C-100303-01	MW-0S3C- 110503-01	MW-0S3C-110503-02	MW10-100103-01	MW10-110503-01	MW11-091003-01	MW11-110503-01	MW12-091003-01	MW-13-091103-01	MW-13-110403-01	MW13C-091103-01	MW-13C-110403-01	MW-13C 110403-02	MW14-093003-01	MW14-100603-01	MW14-110503-01	MW14C-093003-01	MW14C-110503-01
		Date Sampled:	10/3/03	11/5/03	11/5/03	10/1/03	11/5/03	9/10/03	11/5/03	9/10/03	9/11/03	11/4/03	9/11/03	11/4/03	11/4/03	9/30/03	10/6/03	11/5/03	9/30/03	11/5/03
Parameter	CAS #	Units																		
Toluene	108-88-3	ug/l	1 U	0.13 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.17 J	1 U	0.12 J	0.11 J	1 U	1 U	1 U	1 U	0.14 J
trans-1,2-Dichloroethylene	156-60-5	ug/l	1 U	1 U	1 U	4.2	5.3	1.6	1.1	1 U	1 U	1 U	1 U	1 U	1 U	3.4	3.5	0.62 J	1 U	1 U
trans-1,3-Dichloropropene	10061-02-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	ug/l	1 U	1 U	1 U	32	28	1.3	1.1	0.99 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	75-69-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	75-01-4	ug/l	1 U	1 U	1 U	15	23	2.1	2.5	1 U	1 U	1 U	1 U	1 U	1 U	1.4	1.2	1 U	1 U	1 U
Xylene, Meta + Para	Not Applicable	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
1,2-Dichlorobenzene	95-50-1	ug/l	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
2,4,5-Trichlorophenol	95-95-4	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
2,4,6-Trichlorophenol	88-06-2	ug/l	---	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	---	4 U	4 U	4 U
2,4-Dichlorophenol	120-83-2	ug/l	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---	10 U	10 U	10 U
2,4-Dimethylphenol	105-67-9	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
2,4-Dinitrophenol	51-28-5	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
2,4-Dinitrotoluene	121-14-2	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
2,6-Dinitrotoluene	606-20-2	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
2-Chloronaphthalene	91-58-7	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
2-Chlorophenol	95-57-8	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
2-Methylnaphthalene	91-57-6	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
2-Methylphenol	95-48-7	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
2-Nitroaniline	88-74-4	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
2-Nitrophenol	88-75-5	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
3,3-Dichlorobenzidine	91-94-1	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
3-Nitroaniline	99-09-2	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	534-52-1	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
4-Bromophenyl-phenylether	101-55-3	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
4-Chloroaniline	106-47-8	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
4-Chlorophenyl-phenylether	7005-72-3	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
4-Methylphenol	106-44-5	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
4-Nitroaniline	100-01-6	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
4-Nitrophenol	100-02-7	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
Acenaphthene	83-32-9	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Acenaphthylene	208-96-8	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Anthracene	120-12-7	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Benz(a)anthracene	56-55-3	ug/l	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
Benzidine	92-87-5	ug/l	---	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---	50 U	50 U	50 U
Benzo(a)pyrene	50-32-8	ug/l	---	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U
Benzo(b)fluoranthene	205-99-2	ug/l	---	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U
Benzo(g,h,i)perylene	191-24-2	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Benzo(k)fluoranthene	207-08-9	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Benzoic acid	65-85-0	ug/l	---	50 U	50 U	50 U	0.74 J	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---	50 U	50 U	50 U
Benzyl alcohol	100-51-6	ug/l	---	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---	50 U	50 U	50 U
bis(2-Chloroethoxy)methane	111-91-1	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
bis(2-Chloroethyl)ether	111-44-4	ug/l	---	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---	1 U	1 U	1 U
bis(2-Chloroisopropyl)ether	108-60-1	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	---	5 U	5 U	0.55 J	0.38 J	0.54 J	5 U	5 U	0.25	0.6 J	0.27	0.35 J	0.29 J	0.58 J	---	1 J	0.46 J	0.33 J
Butyl benzyl phthalate	85-68-7	ug/l	---	5 U	5 U	0.2 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.11 J	5 U	0.093 J	---	5 U	0.09 J	0.097 J
Carbazole	86-74-8	ug/l	---	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---	10 U	10 U	10 U
Chrysene	218-01-9	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Di-N-Butyl phthalate	84-74-2	ug/l	---	0.94 J	5 U	0.84 J	1.2 J	5 U	1.1 J	5 U	5 U	12	5 U	1.5 J	9.2	1.1 J	---	1.2 J	1.3 J	0.87 J
Di-N-Octyl phthalate	117-84-0	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Dibenz(a,h)anthracene	53-70-3	ug/l	---	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U
Dibenzofuran	132-64-9	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Diethylphthalate	84-66-2	ug/l	---	0.17 J	0.14 J	0.14 J	0.28 J	0.44 J	0.22 J	5 U	0.17	0.15 J	0.17	0.19 J	0.18 J	0.13 J	---	0.27 J	0.11 J	0.19 J
Dimethyl phthalate	131-11-3	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	0.086 J	0.047 J
Fluoranthene	206-44-0	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

Parameter	CAS #	Units	MW-0S3C	MW-0S3C	MW-0S3C	MW-10	MW-10	MW-11	MW-11	MW-12	MW-13	MW-13	MW-13C	MW-13C	MW-13C	MW-14	MW-14	MW-14	MW-14C	MW-14C
		Field ID:	MW053C-100303-01	MW-0S3C- 110503-01	MW-0S3C-110503-02	MW10-100103-01	MW10-110503-01	MW11-091003-01	MW11-110503-01	MW12-091003-01	MW-13-091103-01	MW-13-110403-01	MW13C-091103-01	MW-13C-110403-01	MW-13C 110403-02	MW14-093003-01	MW14-100603-01	MW14-110503-01	MW14C-093003-01	MW14C-110503-01
		Date Sampled:	10/3/03	11/5/03	11/5/03	10/1/03	11/5/03	9/10/03	11/5/03	9/10/03	9/11/03	11/4/03	9/11/03	11/4/03	11/4/03	9/30/03	10/6/03	11/5/03	9/30/03	11/5/03
Fluorene	86-73-7	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Hexachlorobenzene	118-74-1	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Hexachloroethane	67-72-1	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/l	---	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U
Isophorone	78-59-1	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
N-Nitroso-di-N-propylamine	621-64-7	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
N-Nitrosodiphenylamine	86-30-6	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Naphthalene	91-20-3	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Nitrobenzene	98-95-3	ug/l	---	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---	2 U	2 U	2 U
p-Chloro-m-cresol	59-50-7	ug/l	---	5 U	5 U	1.4 J	5 U	0.7 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Pentachlorophenol	87-86-5	ug/l	---	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---	20 U	20 U	20 U
Phenanthrene	85-01-8	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Phenol	108-95-2	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
Pyrene	129-00-0	ug/l	---	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---	5 U	5 U	5 U
PCB-1016	12674-11-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U	0.2 U	0.2 U
PCB-1221	11104-28-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U	0.2 U	0.2 U
PCB-1232	11141-16-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U	0.2 U	0.2 U
PCB-1242	53469-21-9	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U	0.2 U	0.2 U
PCB-1248	12672-29-6	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.088 J	0.16 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U	0.2 U	0.2 U
PCB-1254	11097-69-1	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U	0.2 U	0.2 U
PCB-1260	11096-82-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---	0.2 U	0.2 U	0.2 U
Arsenic, Total	7440-38-2	mg/l	---	0.0017	0.0017	0.0058	0.0051	0.0076	0.0072	0.0067	0.0006	0.0009 J	0.0014	0.0007 J	0.0007 J	0.0019	---	0.0055	0.0052	0.0058
Barium, Total	7440-39-3	mg/l	---	0.05	0.049	0.186	0.174	0.139	0.284	0.162	0.152	0.164	0.041	0.038	0.037	0.125	---	0.173	0.088	0.07
Cadmium, Total	7440-43-9	mg/l	---	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0001 J	0.0002 U	0.0001	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---	0.0001 J	0.0001 J	0.0002 U
Chromium, Total	7440-47-3	mg/l	---	0.0014 J	0.0015 J	0.005 U	0.0016 J	0.0007 J	0.0019 J	0.0007 J	0.0006	0.0007 J	0.0008	0.0005 J	0.005 U	0.0006 J	---	0.0016 J	0.0007 J	0.0012 J
Copper, Total	7440-50-8	mg/l	---	0.0036 J	0.0036 J	0.001 J	0.0015 J	0.002 J	0.006	0.0008 J	0.0014	0.005 U	0.0007	0.0036 J	0.0036 J	0.0035 J	---	0.0023 J	0.0016 J	0.0016 J
Lead, Total	7439-92-1	mg/l	---	0.001 U	0.001 U	0.001 U	0.001 U	0.0007 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0004 J	---	0.0004 J	0.001 U	0.001 U
Mercury, Total	7439-97-6	mg/l	---	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---	0.0002 U	0.0002 U	0.0002 U
Nickel, Total	7440-02-0	mg/l	---	0.0031 J	0.0031 J	0.0074	0.0078	0.0028 J	0.0091	0.0011 J	0.0007	0.0037 J	0.0038	0.0021 J	0.0019 J	0.0082	---	0.0075	0.0036 J	0.0027 J
Selenium, Total	7782-49-2	mg/l	---	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0007 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	---	0.001 U	0.0011	0.001 U
Silver, Total	7440-22-4	mg/l	---	0.0002 U	0.0002 U	0.0002 U	0.0002 U	5e-005 J	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---	0.0002 U	4.4e-005 J	0.00008 J
Zinc, Total	7440-66-6	mg/l	---	0.0056 J	0.012	0.0088 J	0.014	0.0094 J	0.175	0.0095 J	0.0082	0.0074 J	0.0049	0.0026 J	0.0046 J	0.0069 J	---	0.0075 J	0.0074 J	0.0041 J
Arsenic, Dissolved	7440-38-2	mg/l	---	---	---	---	---	---	---	---	---	---	0.0012	---	---	---	---	---	---	---
Barium, Dissolved	7440-39-3	mg/l	---	---	---	---	---	---	---	---	---	---	0.043	---	---	---	---	---	---	---
Cadmium, Dissolved	7440-43-9	mg/l	---	---	---	---	---	---	---	---	---	---	0.0002 U	---	---	---	---	---	---	---
Chromium, Dissolved	7440-47-3	mg/l	---	---	---	---	---	---	---	---	---	---	0.0006	---	---	---	---	---	---	---
Chromium, Hexavalent- Dissolve	18540-29-9	mg/l	---	0.002 J	0.005 U	0.004 J	0.002 J	0.006	0.004 J	0.002 J	0.005 U	0.008	0.005 U	0.002 J	0.002 J	0.0006 U	---	0.009	0.005 U	0.003 J
Copper, Dissolved	7440-50-8	mg/l	---	---	---	---	---	---	---	---	---	---	0.0008	---	---	---	---	---	---	---
Lead, Dissolved	7439-92-1	mg/l	---	---	---	---	---	---	---	---	---	---	0.001 U	---	---	---	---	---	---	---
Mercury, Dissolved	7439-97-6	mg/l	---	---	---	---	---	---	---	---	---	---	0.0002 U	---	---	---	---	---	---	---
Nickel, Dissolved	7440-02-0	mg/l	---	---	---	---	---	---	---	---	---	---	0.0037	---	---	---	---	---	---	---
Selenium, Dissolved	7782-49-2	mg/l	---	---	---	---	---	---	---	---	---	---	0.001 U	---	---	---	---	---	---	---
Silver, Dissolved	7440-22-4	mg/l	---	---	---	---	---	---	---	---	---	---	0.0002 U	---	---	---	---	---	---	---
Zinc, Dissolved	7440-66-6	mg/l	---	---	---	---	---	---	---	---	---	---	0.007	---	---	---	---	---	---	---
Cyanide, Free	57-12-5	mg/l	---	0.007	0.005	0.005	0.004	0.005 U	0.008	0.005 U	0.005 U	0.01	0.005 U	0.008	0.006	0.01	0.005 U	0.01	0.005 U	0.006
Cyanide, Total	57-12-5	mg/l	---	---	---	---	---	0.005 U	---	0.005 U	0.005 U	---	0.005 U	---	---	---	---	---	---	---

NOTES:
U = Non-detect, value is reporting limit
J = Estimated, value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

Parameter	CAS #	Units	MW-15	MW-15	MW-15C	MW-15C	MW-15C	MW-17	MW-17	MW-18	MW-18	MW-19	MW-19	MW-19	MW-20	MW-20	MW-21	MW-22	MW-22	MW-23
		Field ID:	MW15-091103-01	MW-15-110303-01	MW15C-091103-01	MW15C-091103-02	MW-15C-110303-01	MW17-100203-01	MW17-110403-01	MW18-100103-01	MW-18-110403-01	MW19-100303-01	MW19-100303-02	MW19-110403-01	MW20-100303-01	MW-20-110403-01	MW21-010804-01	MW22-100201-01	MW-22-110303-01	MW23-100303-01
		Date Sampled:	9/11/03	11/3/03	9/11/03	9/11/03	11/3/03	10/2/03	11/4/03	10/1/03	11/4/03	10/3/03	10/3/03	11/4/03	10/3/03	11/4/03	1/8/04	10/2/03	11/3/03	10/3/03
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1,1-Trichloroethane	71-55-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	ug/l	1 U	1 U	1 U	1 U	1 U	5.6	6.4	0.37 J	0.39 J	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1-Dichloroethene	75-35-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,1-Dichloropropylene	563-58-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	87-61-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2,3-Trichloropropane	96-18-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	95-63-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,3-Dichloropropane	142-28-9	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
2,2-Dichloropropane	594-20-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
2-Chlorotoluene	95-49-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
2-Hexanone	591-78-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	250 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4-Chlorotoluene	106-43-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
4-Isopropyltoluene	99-87-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
4-Methyl-2-pentanone	108-10-1	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	250 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Acetone	67-64-1	ug/l	25 U	25 U	25 U	25 U	25 U	25 U	130 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Benzene	71-43-2	ug/l	1 U	1 U	1 U	1 U	1 U	0.34 J	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	0.57 J	0.53 J	1 U
Bromobenzene	108-86-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Bromochloromethane	74-97-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Bromoform	75-25-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Bromomethane	74-83-9	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Carbon disulfide	75-15-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Carbon tetrachloride	56-23-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	9	7.5	1 U
Chloroethane	75-00-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Chloroform	67-66-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Chloromethane	74-87-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	ug/l	0.98	0.43 J	1 U	1 U	1 U	160	410	14	12	1 U	1 U	1 U	1 U	1 U	1.0 U	0.61 J	0.27 J	1 U
cis-1,3-Dichloropropene	10061-01-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Dibromochloromethane	124-48-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Dibromomethane	74-95-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Dichlorobromomethane	75-27-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Dichlorodifluoromethane	75-71-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	ug/l	1 U	1 U	1 U	1 U	0.13 J	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Ethylene dibromide	106-93-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Hexachlorobutadiene	87-68-3	ug/l	1 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	1 U	5 U	5 U	1 U	5 U	1 U	1.0 U	5 U	1 U	5 U
Isopropylbenzene	98-82-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Methyl ethyl ketone	78-93-3	ug/l	25 U	25 U	25 U	25 U	25 U	25 U	130 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Methyl tert butyl ether	1634-04-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Methylene chloride	75-09-2	ug/l	5 U	0.33 J	5 U	5 U	0.39 J	5 U	5.1 J	5 U	0.2 J	5 U	5 U	0.3 J	5 U	0.44 J	5.0 U	5 U	0.18 J	5 U
n-Butylbenzene	104-51-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
n-Propylbenzene	103-65-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Naphthalene	91-20-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
o-Xylene	95-47-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
sec-Butylbenzene	135-98-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Styrene	100-42-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
tert-Butylbenzene	98-06-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-15	MW-15	MW-15C	MW-15C	MW-15C	MW-17	MW-17	MW-18	MW-18	MW-19	MW-19	MW-19	MW-20	MW-20	MW-21	MW-22	MW-22	MW-23
		Field ID:	MW15-091103-01	MW-15-110303-01	MW15C-091103-01	MW15C-091103-02	MW-15C-110303-01	MW17-100203-01	MW17-110403-01	MW18-100103-01	MW-18-110403-01	MW19-100303-01	MW19-100303-02	MW19-110403-01	MW20-100303-01	MW-20-110403-01	MW21-010804-01	MW22-100201-01	MW-22-110303-01	MW23-100303-01
		Date Sampled:	9/11/03	11/3/03	9/11/03	9/11/03	11/3/03	10/2/03	11/4/03	10/1/03	11/4/03	10/3/03	10/3/03	11/4/03	10/3/03	11/4/03	1/8/04	10/2/03	11/3/03	10/3/03
Parameter	**CAS #**	**Units**																		
Toluene	108-88-3	ug/l	1 U	1 U	1 U	1 U	0.11 J	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	0.14 J	1 U
trans-1,2-Dichloroethylene	156-60-5	ug/l	1 U	1 U	1 U	1 U	1 U	8.1	140	2	1.8	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	10061-02-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Trichloroethene	79-01-6	ug/l	1 U	1 U	1 U	1 U	1 U	26	300	6.4	5.6	1 U	1 U	1 U	1 U	1 U	1.0 U	0.6 J	1 U	1 U
Trichlorofluoromethane	75-69-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Vinyl chloride	75-01-4	ug/l	1 U	1 U	1 U	1 U	1 U	84	330	16	14	9	9.2	7.5	1 U	1 U	1.0 U	1 U	1 U	3.8
Xylene, Meta + Para	Not Applicable	ug/l	2 U	0.42 J	2 U	2 U	0.47 J	2 U	10 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2 U	0.36 J	2 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	1 U	1 U	1 U	0.47 J	0.65 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	1 U	1 U	1 U	0.055 J	0.078 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	95-95-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	88-06-2	ug/l	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4.0 U	4 U	4 U	4 U
2,4-Dichlorophenol	120-83-2	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	105-67-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
2,4-Dinitrophenol	51-28-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	121-14-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
2,6-Dinitrotoluene	606-20-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
2-Chloronaphthalene	91-58-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
2-Chlorophenol	95-57-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
2-Methylnaphthalene	91-57-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
2-Methylphenol	95-48-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
2-Nitroaniline	88-74-4	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	88-75-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
3,3-Dichlorobenzidine	91-94-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline	99-09-2	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	534-52-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl-phenylether	101-55-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
4-Chloroaniline	106-47-8	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Chlorophenyl-phenylether	7005-72-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
4-Methylphenol	106-44-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
4-Nitroaniline	100-01-6	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Nitrophenol	100-02-7	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	83-32-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Acenaphthylene	208-96-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Anthracene	120-12-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	0.085 J	0.081 J	5 U
Benz(a)anthracene	56-55-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
Benzidine	92-87-5	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Benzo(a)pyrene	50-32-8	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2 U	2 U	2 U
Benzo(b)fluoranthene	205-99-2	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2 U	2 U	2 U
Benzo(g,h,i)perylene	191-24-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Benzo(k)fluoranthene	207-08-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Benzoic acid	65-85-0	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	0.59 J	50 U	50 U	50 U	50 U
Benzyl alcohol	100-51-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	0.11 J	50 U
bis(2-Chloroethoxy)methane	111-91-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
bis(2-Chloroethyl)ether	111-44-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U
bis(2-Chloroisopropyl)ether	108-60-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	0.57	5 U	0.33	0.28	5 U	0.22 J	0.44 J	0.51 J	5 U	0.24 J	0.26 J	0.44 J	0.47 J	0.45 J	5.0 U	0.46 J	0.78 J	0.36 J
Butyl benzyl phthalate	85-68-7	ug/l	5 U	5 U	5 U	5 U	5 U	0.056 J	5 U	5 U	5 U	0.051 J	5 U	5 U	0.17 J	5 U	5.0 U	0.2 J	5 U	0.057 J
Carbazole	86-74-8	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	218-01-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Di-N-Butyl phthalate	84-74-2	ug/l	1.7	2.9 J	5 U	5 U	3.1 J	0.62 J	15	0.56 J	0.9 J	0.5 J	0.33 J	2 J	0.81 J	3.4 J	0.82	1.1 J	2.7 J	0.42 J
Di-N-Octyl phthalate	117-84-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	0.033 J	5 U	5 U
Dibenz(a,h)anthracene	53-70-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2 U	2 U	2 U
Dibenzofuran	132-64-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Diethylphthalate	84-66-2	ug/l	0.22	0.29 J	0.18	0.15	0.2 J	5 U	0.26 J	0.16 J	0.22 J	5 U	5 U	0.22 J	0.22 J	0.48 J	0.22 J	5 U	0.46 J	0.093 J
Dimethyl phthalate	131-11-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Fluoranthene	206-44-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	0.16 J	0.15 J	5 U

		Location ID:	MW-15	MW-15	MW-15C	MW-15C	MW-15C	MW-17	MW-17	MW-18	MW-18	MW-19	MW-19	MW-19	MW-20	MW-20	MW-21	MW-22	MW-22	MW-23
		Field ID:	MW15-091103-01	MW-15-110303-01	MW15C-091103-01	MW15C-091103-02	MW-15C-110303-01	MW17-100203-01	MW17-110403-01	MW18-100103-01	MW-18-110403-01	MW19-100303-01	MW19-100303-02	MW19-110403-01	MW20-100303-01	MW-20-110403-01	MW21-010804-01	MW22-100201-01	MW-22-110303-01	MW23-100303-01
		Date Sampled:	9/11/03	11/3/03	9/11/03	9/11/03	11/3/03	10/2/03	11/4/03	10/1/03	11/4/03	10/3/03	10/3/03	11/4/03	10/3/03	11/4/03	1/8/04	10/2/03	11/3/03	10/3/03
Parameter	CAS #	Units																		
Fluorene	86-73-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Hexachlorobenzene	118-74-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2 U	2 U	2 U
Isophorone	78-59-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
N-Nitroso-di-N-propylamine	621-64-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	86-30-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Naphthalene	91-20-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	0.049 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U
Nitrobenzene	98-95-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2 U	2 U	2 U
p-Chloro-m-cresol	59-50-7	ug/l	5 U	5 U	5 U	5 U	5 U	0.54 J	5 U	1 J	5 U	0.26 J	0.28 J	5 U	5 U	0.19 J	5.0 U	5 U	0.18 J	5 U
Pentachlorophenol	87-86-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Phenanthrene	85-01-8	ug/l	0.094	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	0.22 J	0.26 J	5 U
Phenol	108-95-2	ug/l	5 U	0.03 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.030 J	5 U	0.12 J	5 U
Pyrene	129-00-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	0.18 J	0.057 J	5 U
PCB-1016	12674-11-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U
PCB-1221	11104-28-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U
PCB-1232	11141-16-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U
PCB-1242	53469-21-9	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U
PCB-1248	12672-29-6	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U
PCB-1254	11097-69-1	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U
PCB-1260	11096-82-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U
Arsenic, Total	7440-38-2	mg/l	0.0069	0.0065	0.0026	0.0026	0.0025	0.0021	0.0017	0.0012	0.001	0.0049	0.0048	0.0037	0.0016	0.0028	0.0022	0.161	0.131	0.0086
Barium, Total	7440-39-3	mg/l	0.286	0.212	0.053	0.054	0.051	0.17	0.213	0.129	0.124	0.392	0.387	0.382	0.407	0.537	0.413	0.333	0.31	0.161
Cadmium, Total	7440-43-9	mg/l	0.0001	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 J	0.0002 U	0.0002 U	7e-005 J	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0003	0.0002 U	0.0002 U	8e-005 J
Chromium, Total	7440-47-3	mg/l	0.0008	0.005 U	0.0005	0.0007	0.005 U	0.0013 J	0.005 U	0.0013 J	0.0017 J	0.005 U	0.005 U	0.005 U	0.0007 J	0.0005 J	0.0007 J	0.0016 J	0.0006 J	0.0006 J
Copper, Total	7440-50-8	mg/l	0.0012	0.005 U	0.0028	0.0028	0.0015 J	0.0026 J	0.0016 J	0.103	0.078	0.0009 J	0.0011 J	0.0006 J	0.0022 J	0.032	0.0012 J	0.002 J	0.001 J	0.001 J
Lead, Total	7439-92-1	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0003 J	0.001 U	0.001 U	0.001 U	0.00023 J
Mercury, Total	7439-97-6	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---	0.0002 U	0.0002 U	0.0002 U
Nickel, Total	7440-02-0	mg/l	0.0022	0.00497 J	0.0031	0.0034	0.0016 J	0.04	0.035	0.08	0.08	0.0008 J	0.0011 J	0.0037 J	0.0038 J	0.017	0.0008 J	0.0065	0.004 J	0.0007 J
Selenium, Total	7782-49-2	mg/l	0.0009	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0006 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 J
Silver, Total	7440-22-4	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00005 J	0.0002 U	0.00005 J	0.00009 J	0.0002 U	0.0002 U	0.0002 U
Zinc, Total	7440-66-6	mg/l	0.0063	0.0074 J	0.0068	0.0031	0.0085 J	0.0046 J	0.009 J	0.0082 J	0.013	0.0046 J	0.011	0.013	0.0047 J	0.012	0.0059 J	0.011	0.0083 J	0.0096 J
Arsenic, Dissolved	7440-38-2	mg/l	---	0.0072	---	---	---	---	---	---	---	---	---	---	---	---	0.0026	---	---	---
Barium, Dissolved	7440-39-3	mg/l	---	0.222	---	---	---	---	---	---	---	---	---	---	---	---	0.42	---	---	---
Cadmium, Dissolved	7440-43-9	mg/l	---	0.00009 J	---	---	---	---	---	---	---	---	---	---	---	---	0.0003	---	---	---
Chromium, Dissolved	7440-47-3	mg/l	---	0.005 U	---	---	---	---	---	---	---	---	---	---	---	---	0.005 U	---	---	---
Chromium, Hexavalent- Dissolve	18540-29-9	mg/l	0.005 U	0.008	0.005 U	0.005 U	0.002 J	0.006	0.007	0.02	0.002 J	0.005 U	0.0008 J	0.006	0.0008 J	0.009	0.005 U	0.02	0.02	0.005
Copper, Dissolved	7440-50-8	mg/l	---	0.0006 J	---	---	---	---	---	---	---	---	---	---	---	---	0.0029 J	---	---	---
Lead, Dissolved	7439-92-1	mg/l	---	0.001 U	---	---	---	---	---	---	---	---	---	---	---	---	0.001 U	---	---	---
Mercury, Dissolved	7439-97-6	mg/l	---	0.0002 U	---	---	---	---	---	---	---	---	---	---	---	---	0.0002 U	---	---	---
Nickel, Dissolved	7440-02-0	mg/l	---	0.0007 J	---	---	---	---	---	---	---	---	---	---	---	---	0.0008 J	---	---	---
Selenium, Dissolved	7782-49-2	mg/l	---	0.001 U	---	---	---	---	---	---	---	---	---	---	---	---	0.001 U	---	---	---
Silver, Dissolved	7440-22-4	mg/l	---	0.0002 U	---	---	---	---	---	---	---	---	---	---	---	---	0.00008 J	---	---	---
Zinc, Dissolved	7440-66-6	mg/l	---	0.0099 J	---	---	---	---	---	---	---	---	---	---	---	---	0.009 J	---	---	---
Cyanide, Free	57-12-5	mg/l	0.005 U	0.03	0.005 U	0.005 U	0.01	0.02	0.01	0.07	0.04	0.005	0.0022	0.008	0.01	0.005 U	0.005 U	0.0025	0.009	0.004
Cyanide, Total	57-12-5	mg/l	0.005 U	---	0.005 U	0.005 U	---	---	---	---	---	---	---	---	---	---	---	---	---	---

NOTES:
U = Non-detect, value is reporting limit
J = Estimated, value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-23	MW-23	MW-25	MW-25	MW-26	MW-26	MW-27	MW-27C	MW-28	MW-28C	MW-29	MW-29C	MW-29C	MW-A2	MW-B1	MW-B2	MW-B4	MW-BCK1
		Field ID:	MW23-100303-02	MW-23-110303-01	MW25-100203-01	MW25-110503-01	MW26-100203-01	MW26-110403-01	MW27-122903-01	MW-27C-122903-01	MW28-122903-01	MW28C-122903-01	MW29-123003-01	MW29C-123003-01	MW29C-123003-02	MWA2-100303-01	MWB1-100203-01	MWB2-100203-01	MWB4-100203-01	MW-BCK-1-100103-01
		Date Sampled:	10/3/03	11/3/03	10/2/03	11/5/03	10/2/03	11/4/03	12/29/03	12/29/03	12/29/03	12/29/03	12/30/03	12/30/03	12/30/03	10/3/03	10/2/03	10/2/03	10/2/03	10/1/03
Parameter	CAS #	Units																		
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,1,1-Trichloroethane	71-55-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	ug/l	1 U	1 U	10 U	10 U	1	0.9 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	7.4	1 U	0.89 J	1 U
1,1-Dichloroethene	75-35-4	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5	1 U	1 U	1 U
1,1-Dichloropropylene	563-58-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	87-61-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	0.41 J	0.21 J	1.0 U	1 U	5 U	1 U	1 U	1 U
1,2,3-Trichloropropane	96-18-4	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	50 U	50 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	0.31 J	5.0 U	5.0 U	5 U	25 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	95-63-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,3-Dichloropropane	142-28-9	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
2,2-Dichloropropane	594-20-7	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
2-Chlorotoluene	95-49-8	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
2-Hexanone	591-78-6	ug/l	50 U	50 U	500 U	500 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	250 U	50 U	50 U	50 U
4-Chlorotoluene	106-43-4	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
4-Isopropyltoluene	99-87-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
4-Methyl-2-pentanone	108-10-1	ug/l	50 U	50 U	500 U	500 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	250 U	50 U	50 U	50 U
Acetone	67-64-1	ug/l	25 U	25 U	250 U	250 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	130 U	25 U	25 U	25 U
Benzene	71-43-2	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Bromobenzene	108-86-1	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Bromochloromethane	74-97-5	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Bromoform	75-25-2	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Bromomethane	74-83-9	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Carbon disulfide	75-15-0	ug/l	5 U	5 U	50 U	50 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	25 U	5 U	5 U	5 U
Carbon tetrachloride	56-23-5	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Chloroethane	75-00-3	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Chloroform	67-66-3	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Chloromethane	74-87-3	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	ug/l	1 U	1 U	440	310	28	28	1.0 U	1.0 U	1.0 U	0.14 J	1.0 U	1.0 U	1.0 U	1 U	450	1	3.7	1 U
cis-1,3-Dichloropropene	10061-01-5	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Dibromochloromethane	124-48-1	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Dibromomethane	74-95-3	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Dichlorobromomethane	75-27-4	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Dichlorodifluoromethane	75-71-8	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Ethylene dibromide	106-93-4	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Hexachlorobutadiene	87-68-3	ug/l	5 U	1 U	50 U	10 U	5 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	5 U	25 U	5 U	5 U	1 U
Isopropylbenzene	98-82-8	ug/l	5 U	5 U	50 U	50 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	25 U	5 U	5 U	5 U
Methyl ethyl ketone	78-93-3	ug/l	25 U	25 U	250 U	250 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	130 U	25 U	25 U	25 U
Methyl tert butyl ether	1634-04-4	ug/l	5 U	5 U	50 U	50 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	25 U	5 U	5 U	5 U
Methylene chloride	75-09-2	ug/l	5 U	0.25 J	50 U	11 J	5 U	0.27 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	25 U	5 U	5 U	5 U
n-Butylbenzene	104-51-8	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	0.22 J	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
n-Propylbenzene	103-65-1	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Naphthalene	91-20-3	ug/l	5 U	5 U	50 U	50 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	25 U	5 U	5 U	5 U
o-Xylene	95-47-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
sec-Butylbenzene	135-98-8	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	0.10 J	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Styrene	100-42-5	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
tert-Butylbenzene	98-06-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-23	MW-23	MW-25	MW-25	MW-26	MW-26	MW-27	MW-27C	MW-28	MW-28C	MW-29	MW-29C	MW-29C	MW-A2	MW-B1	MW-B2	MW-B4	MW-BCK1
		Field ID:	MW23-100303-02	MW23-110303-01	MW25-100203-01	MW25-110503-01	MW26-100203-01	MW26-110403-01	MW27-122903-01	MW-27C-122903-01	MW28-122903-01	MW28C-122903-01	MW29-123003-01	MW29C-123003-01	MW29C-123003-02	MWA2-100303-01	MWB1-100203-01	MWB2-100203-01	MWB4-100203-01	MW-BCK-1-100103-01
		Date Sampled:	10/3/03	11/3/03	10/2/03	11/5/03	10/2/03	11/4/03	12/29/03	12/29/03	12/29/03	12/29/03	12/30/03	12/30/03	12/30/03	10/3/03	10/2/03	10/2/03	10/2/03	10/1/03
Parameter	CAS #	Units																		
Toluene	108-88-3	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	0.12 J	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	0.13 J	1 U
trans-1,2-Dichloroethylene	156-60-5	ug/l	1 U	1 U	220	150	1.3	0.99 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	120	1 U	0.74 J	1 U
trans-1,3-Dichloropropene	10061-02-6	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Trichloroethene	79-01-6	ug/l	1 U	1 U	1800	1200	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	280	1 U	0.54 J	1 U
Trichlorofluoromethane	75-69-4	ug/l	1 U	1 U	10 U	10 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	5 U	1 U	1 U	1 U
Vinyl chloride	75-01-4	ug/l	3.7	3.1	8.1 J	6.4 J	21	34	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	250	38	0.33 J	1 U
Xylene, Meta + Para	Not Applicable	ug/l	2 U	2 U	20 U	20 U	2 U	2 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	10 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	0.37 J	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	95-95-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	88-06-2	ug/l	4 U	4 U	4 U	4 U	4 U	4 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4 U	4 U	4 U	4 U	4 U
2,4-Dichlorophenol	120-83-2	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	105-67-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	51-28-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	121-14-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	606-20-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	91-58-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	95-57-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	91-57-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
2-Methylphenol	95-48-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.073 J	5 U	5 U	5 U	5 U
2-Nitroaniline	88-74-4	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	88-75-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
3,3-Dichlorobenzidine	91-94-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline	99-09-2	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	534-52-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl-phenylether	101-55-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
4-Chloroaniline	106-47-8	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Chlorophenyl-phenylether	7005-72-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	106-44-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.12 J	5 U	5 U	2 J	5 U
4-Nitroaniline	100-01-6	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Nitrophenol	100-02-7	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	83-32-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	208-96-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Anthracene	120-12-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Benz(a)anthracene	56-55-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U
Benzidine	92-87-5	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Benzo(a)pyrene	50-32-8	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U
Benzo(b)fluoranthene	205-99-2	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U
Benzo(g,h,i)perylene	191-24-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	207-08-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Benzoic acid	65-85-0	ug/l	50 U	50 U	50 U	50 U	50 U	0.52 J	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	120	50 U
Benzyl alcohol	100-51-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	0.12 J	0.055 J	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)methane	111-91-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethyl)ether	111-44-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroisopropyl)ether	108-60-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	0.32 J	0.49 J	0.59 J	5 U	0.29 J	0.31 J	0.54 J	3.7 J	0.55 J	2.6 J	0.49 J	0.40 J	0.65 J	0.41 J	0.31 J	0.3 J	5 U	0.5 J
Butyl benzyl phthalate	85-68-7	ug/l	0.062 J	5 U	0.21 J	5 U	0.085 J	5 U	5.0 U	0.66 J	5.0 U	0.56 J	5.0 U	0.23 J	0.29 J	0.17 J	5 U	5 U	5 U	0.065 J
Carbazole	86-74-8	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	218-01-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Di-N-Butyl phthalate	84-74-2	ug/l	0.3 J	1.7 J	1.2 J	1.1 J	0.72 J	12	16	14	12	12	0.85 J	1.0 J	1.1 J	0.41 J	0.5 J	0.71 J	5 U	0.82 J
Di-N-Octyl phthalate	117-84-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.061 J	5 U	5 U	5 U	5 U
Dibenz(a,h)anthracene	53-70-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U
Dibenzofuran	132-64-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Diethylphthalate	84-66-2	ug/l	0.093 J	0.2 J	0.14 J	0.25 J	0.11 J	0.23 J	0.22 J	0.19 J	0.19 J	0.22 J	0.16 J	0.15 J	0.16 J	0.079 J	0.11 J	0.076 J	5 U	0.12 J
Dimethyl phthalate	131-11-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	206-44-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

Parameter	CAS #	Units	MW-23	MW-23	MW-25	MW-25	MW-26	MW-26	MW-27	MW-27C	MW-28	MW-28C	MW-29	MW-29C	MW-29C	MW-A2	MW-B1	MW-B2	MW-B4	MW-BCK1
		Field ID:	MW23-100303-02	MW-23-110303-01	MW25-100203-01	MW25-110503-01	MW26-100203-01	MW26-110403-01	MW27-122903-01	MW-27C-122903-01	MW28-122903-01	MW28C-122903-01	MW29-123003-01	MW29C-123003-01	MW29C-123003-02	MWA2-100303-01	MWB1-100203-01	MWB2-100203-01	MWB4-100203-01	MW-BCK-1-100103-01
		Date Sampled:	10/3/03	11/3/03	10/2/03	11/5/03	10/2/03	11/4/03	12/29/03	12/29/03	12/29/03	12/29/03	12/30/03	12/30/03	12/30/03	10/3/03	10/2/03	10/2/03	10/2/03	10/1/03
Fluorene	86-73-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobenzene	118-74-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	87-68-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	77-47-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	67-72-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	193-39-5	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U
Isophorone	78-59-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
N-Nitroso-di-N-propylamine	621-64-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	86-30-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	0.14 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	91-20-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Nitrobenzene	98-95-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U
p-Chloro-m-cresol	59-50-7	ug/l	0.3 J	5 U	1 J	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	0.53 J	0.62 J	5 U	1.5 J
Pentachlorophenol	87-86-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Phenanthrene	85-01-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
Phenol	108-95-2	ug/l	5 U	0.025 J	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	2 J	5 U
Pyrene	129-00-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5 U	5 U	5 U	5 U	5 U
PCB-1016	12674-11-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1221	11104-28-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1232	11141-16-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1242	53469-21-9	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1248	12672-29-6	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1254	11097-69-1	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
PCB-1260	11096-82-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Arsenic, Total	7440-38-2	mg/l	0.0075	0.011	0.0038	0.0035	0.0081	0.0059	0.0018	0.0017	0.0024	0.0078	0.0028	0.002	0.002	0.0074	0.0074	0.02	0.0023	0.013
Barium, Total	7440-39-3	mg/l	0.162	0.173	0.077	0.067	0.355	0.326	0.077	0.082	0.175	0.128	0.123	0.089	0.087	0.155	0.22	0.158	0.149	0.125
Cadmium, Total	7440-43-9	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0008	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	9e-005 J	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Chromium, Total	7440-47-3	mg/l	0.005 U	0.005 U	0.0017 J	0.0016 J	0.0015 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001 J	0.005 U	0.005 U	0.0024 J	0.0035 J	0.0086	0.078	0.005 U
Copper, Total	7440-50-8	mg/l	0.0009 J	0.0035 J	0.022	0.0082	0.0035 J	0.0009 J	0.0023 J	0.0009 J	0.001 J	0.0016 J	0.0015 J	0.0012 J	0.0012 J	0.003 J	0.0025 J	0.0009 J	0.0037 J	0.005 U
Lead, Total	7439-92-1	mg/l	0.001 U	0.001 U	0.0014	0.001 U	0.00022 J	0.001 U	0.001 U	0.0004 J	0.0044	0.001 U	0.0006 J	0.001 U	0.001 U	0.0004 J	0.001 U	0.001 U	0.00023 J	0.001 U
Mercury, Total	7439-97-6	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---	---	---	---	---	---	---	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Nickel, Total	7440-02-0	mg/l	0.0004 J	0.0022 J	1.18	1.07	0.029	0.023	0.0041 J	0.0036 J	0.0044 J	0.0019 J	0.0038 J	0.0016 J	0.0014 J	0.0045 J	0.152	0.0059	0.064	0.003 J
Selenium, Total	7782-49-2	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Silver, Total	7440-22-4	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00009 J	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Zinc, Total	7440-66-6	mg/l	0.0084 J	0.0071 J	0.0091 J	0.0067 J	0.0097 J	0.0053 J	0.012	0.0091 J	0.0092 J	0.0056 J	0.0096 J	0.0063 J	0.0052 J	0.019	0.093	0.0077 J	0.0077 J	0.0068 J
Arsenic, Dissolved	7440-38-2	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Barium, Dissolved	7440-39-3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium, Dissolved	7440-43-9	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chromium, Dissolved	7440-47-3	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chromium, Hexavalent- Dissolve	18540-29-9	mg/l	0.004 J	0.006	0.003 J	0.003 J	0.006	0.009	0.002 J	0.003 J	0.004 J	0.007	0.005 U	0.001 J	0.0008 J	0.005 U	0.004 J	0.002 J	0.002 J	0.005 U
Copper, Dissolved	7440-50-8	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lead, Dissolved	7439-92-1	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mercury, Dissolved	7439-97-6	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nickel, Dissolved	7440-02-0	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Selenium, Dissolved	7782-49-2	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Silver, Dissolved	7440-22-4	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Zinc, Dissolved	7440-66-6	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cyanide, Free	57-12-5	mg/l	0.005 U	0.006	0.005 U	0.003	0.005 U	0.02	0.006	0.006	0.007	0.004	0.005 U	0.008	0.006	0.007	0.0022	0.005 U	0.005 U	0.005
Cyanide, Total	57-12-5	mg/l	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

NOTES:
U = Non-detect, value is reporting limit
J = Estimated, value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-BCK2	MW-BCK3	MW-C2	MW-E2	MW-F2	MW-F5	MW-F5	MW-G1	MW-G4	MW-J2	MW-J3	OS1	OS3	OW16
		Field ID:	MW-BCK-2-100103-01	MW-BCK-3-100103-01	MWC2-100203-01	MWE2-100303-01	MWF2-100201-01	MWF5-100303-01	MWF5-100303-02	MWG1-100303-01	MWG4-100303-01	MWJ2- 100203 01	MWJ3- 100203 01	OS1- 071703-01	OS3- 071703-01	OW16- 101703 01
		Date Sampled:	10/1/03	10/1/03	10/2/03	10/3/03	10/2/03	10/3/03	10/3/03	10/3/03	10/3/03	10/2/03	10/2/03	7/17/03	7/17/03	10/17/03
Parameter	CAS #	Units														
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	71-55-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.5 J	6	1 U
1,1-Dichloroethene	75-35-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropylene	563-58-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	87-61-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	96-18-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	95-63-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	142-28-9	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	594-20-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	95-49-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	591-78-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4-Chlorotoluene	106-43-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene	99-87-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	108-10-1	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Acetone	67-64-1	ug/l	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	81
Benzene	71-43-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	108-86-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	74-97-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	75-15-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	56-23-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	67-66-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.3	59	1 U
cis-1,3-Dichloropropene	10061-01-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	124-48-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	74-95-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorobromomethane	75-27-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	75-71-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide	106-93-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	87-68-3	ug/l	1 U	1 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U
Isopropylbenzene	98-82-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl ethyl ketone	78-93-3	ug/l	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	26
Methyl tert butyl ether	1634-04-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	75-09-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.4 J	0.4 J	0.49
n-Butylbenzene	104-51-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	103-65-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	91-20-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
o-Xylene	95-47-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	135-98-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	100-42-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	98-06-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

		Location ID:	MW-BCK2	MW-BCK3	MW-C2	MW-E2	MW-F2	MW-F5	MW-F5	MW-G1	MW-G4	MW-J2	MW-J3	OS1	OS3	OW16
		Field ID:	MW-BCK-2-100103-01	MW-BCK-3-100103-01	MWC2-100203-01	MWE2-100303-01	MWF2-100201-01	MWF5-100303-01	MWF5-100303-02	MWG1-100303-01	MWG4-100303-01	MWJ2- 100203 01	MWJ3- 100203 01	OS1- 071703-01	OS3- 071703-01	OW16- 101703 01
		Date Sampled:	10/1/03	10/1/03	10/2/03	10/3/03	10/2/03	10/3/03	10/3/03	10/3/03	10/3/03	10/2/03	10/2/03	7/17/03	7/17/03	10/17/03
Parameter	**CAS #**	**Units**														
Toluene	108-88-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethylene	156-60-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.3	1 U
trans-1,3-Dichloropropene	10061-02-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.4 J	1 U
Trichlorofluoromethane	75-69-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	75-01-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.8	1 U	1 U	1.2	34	1 U
Xylene, Meta + Para	Not Applicable	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---
2,4,5-Trichlorophenol	95-95-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
2,4,6-Trichlorophenol	88-06-2	ug/l	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	---
2,4-Dichlorophenol	120-83-2	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---
2,4-Dimethylphenol	105-67-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
2,4-Dinitrophenol	51-28-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
2,4-Dinitrotoluene	121-14-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
2,6-Dinitrotoluene	606-20-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
2-Chloronaphthalene	91-58-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
2-Chlorophenol	95-57-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
2-Methylnaphthalene	91-57-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
2-Methylphenol	95-48-7	ug/l	5 U	5 U	5 U	5 U	5 U	0.033 J	0.046 J	5 U	5 U	0.081 J	5 U	5 U	5 U	---
2-Nitroaniline	88-74-4	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
2-Nitrophenol	88-75-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
3,3-Dichlorobenzidine	91-94-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
3-Nitroaniline	99-09-2	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
4,6-Dinitro-2-methylphenol	534-52-1	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
4-Bromophenyl-phenylether	101-55-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
4-Chloroaniline	106-47-8	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
4-Chlorophenyl-phenylether	7005-72-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
4-Methylphenol	106-44-5	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	0.044 J	0.068 J	5 U	5 U	5 U	5 U	5 U	---
4-Nitroaniline	100-01-6	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
4-Nitrophenol	100-02-7	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
Acenaphthene	83-32-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Acenaphthylene	208-96-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Anthracene	120-12-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Benz(a)anthracene	56-55-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---
Benzidine	92-87-5	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---
Benzo(a)pyrene	50-32-8	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---
Benzo(b)fluoranthene	205-99-2	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---
Benzo(g,h,i)perylene	191-24-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Benzo(k)fluoranthene	207-08-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Benzoic acid	65-85-0	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---
Benzyl alcohol	100-51-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	---
bis(2-Chloroethoxy)methane	111-91-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
bis(2-Chloroethyl)ether	111-44-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	---
bis(2-Chloroisopropyl)ether	108-60-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
bis(2-Ethylhexyl)phthalate	117-81-7	ug/l	0.56 J	0.51 J	0.37 J	0.32 J	0.44 J	0.36 J	0.37 J	0.85 J	0.31 J	0.35 J	0.37 J	0.66 J	0.8 J	---
Butyl benzyl phthalate	85-68-7	ug/l	5 U	0.073 J	5 U	5 U	5 U	0.086 J	5 U	0.11 J	0.094 J	5 U	5 U	0.27 J	0.99 J	---
Carbazole	86-74-8	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	---
Chrysene	218-01-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Di-N-Butyl phthalate	84-74-2	ug/l	1.5 J	2.4 J	1 J	0.4 J	0.85 J	0.39 J	0.26 J	0.28 J	0.25 J	1 J	0.97 J	2.9 J	1.8 J	---
Di-N-Octyl phthalate	117-84-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Dibenz(a,h)anthracene	53-70-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---
Dibenzofuran	132-64-9	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Diethylphthalate	84-66-2	ug/l	0.11 J	0.1 J	0.096 J	5 U	5 U	0.7 J	5 U	0.064 J	0.1 J	0.088 J	0.096 J	5 U	5 U	---
Dimethyl phthalate	131-11-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Fluoranthene	206-44-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---

APPENDIX A
GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	MW-BCK2	MW-BCK3	MW-C2	MW-E2	MW-F2	MW-F5	MW-F5	MW-G1	MW-G4	MW-J2	MW-J3	OS1	OS3	OW16
		Field ID:	MW-BCK-2-100103-01	MW-BCK-3-100103-01	MWC2-100203-01	MWE2-100303-01	MWF2-100201-01	MWF5-100303-01	MWF5-100303-02	MWG1-100303-01	MWG4-100303-01	MWJ2- 100203 01	MWJ3- 100203 01	OS1- 071703-01	OS3- 071703-01	OW16- 101703 01
		Date Sampled:	10/1/03	10/1/03	10/2/03	10/3/03	10/2/03	10/3/03	10/3/03	10/3/03	10/3/03	10/2/03	10/2/03	7/17/03	7/17/03	10/17/03
Parameter	CAS #	Units														
Fluorene	86-73-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Hexachlorobenzene	118-74-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Hexachlorobutadiene	87-68-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Hexachlorocyclopentadiene	77-47-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Hexachloroethane	67-72-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Indeno(1,2,3-cd)pyrene	193-39-5	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---
Isophorone	78-59-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
N-Nitroso-di-N-propylamine	621-64-7	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
N-Nitrosodiphenylamine	86-30-6	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Naphthalene	91-20-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Nitrobenzene	98-95-3	ug/l	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	---
p-Chloro-m-cresol	59-50-7	ug/l	1.5 J	5 U	5 U	5 U	0.74 J	5 U	0.21 J	0.24 J	0.21 J	0.77 J	0.82 J	0.45 J	0.42 J	---
Pentachlorophenol	87-86-5	ug/l	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	---
Phenanthrene	85-01-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Phenol	108-95-2	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
Pyrene	129-00-0	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	---
PCB-1016	12674-11-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---
PCB-1221	11104-28-2	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---
PCB-1232	11141-16-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---
PCB-1242	53469-21-9	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---
PCB-1248	12672-29-6	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.13 J	0.2 U	0.2 U	---
PCB-1254	11097-69-1	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---
PCB-1260	11096-82-5	ug/l	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	---
Arsenic, Total	7440-38-2	mg/l	0.011	0.0052	0.0026	0.011	0.0013	0.0091	0.0089	0.041	0.011	0.0069	0.0016	0.003	0.006	---
Barium, Total	7440-39-3	mg/l	0.186	0.129	0.167	0.151	0.0039 J	0.308	0.296	0.411	0.397	0.14	0.018	0.155	0.247	---
Cadmium, Total	7440-43-9	mg/l	0.0002 U	0.00014 J	0.0002 U	0.0001 J	0.0002 U	0.0001 J	0.0001 J	0.0002 U	0.0001 J	0.0086	0.0002 U	0.000196 J	0.0002 U	---
Chromium, Total	7440-47-3	mg/l	0.0009 J	0.005 U	0.011	0.005 U	0.0092	0.0011 J	0.0017 J	0.0017 J	0.0007 J	0.006	0.017	0.0011 J	0.0011 J	---
Copper, Total	7440-50-8	mg/l	0.005 U	0.005 U	0.003 J	0.0008 J	0.0047 J	0.0017 J	0.0018 J	0.0012 J	0.0012 J	0.011	0.0054	0.005 U	0.0013 J	---
Lead, Total	7439-92-1	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0003 J	0.001 U	0.001 U	0.001 U	0.0087	0.0004 J	0.001 U	0.001 U	---
Mercury, Total	7439-97-6	mg/l	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---
Nickel, Total	7440-02-0	mg/l	0.0035 J	0.003 J	0.03	0.0007 J	0.016	0.0018 J	0.0049 J	0.0012 J	0.0006 J	0.017	0.012	0.0012 J	0.0018 J	---
Selenium, Total	7782-49-2	mg/l	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0006 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	---
Silver, Total	7440-22-4	mg/l	0.0002 U	0.0002 U	0.0002 U	4.3e-005 J	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	---
Zinc, Total	7440-66-6	mg/l	0.0087 J	0.0069 J	0.0071 J	0.0091 J	0.0021 J	0.0044 J	0.0046 J	0.0027 J	0.0032 J	0.067	0.012	0.021	0.04	---
Arsenic, Dissolved	7440-38-2	mg/l	0.011	---	---	---	---	---	---	---	0.0036	0.0049	---	---	---	---
Barium, Dissolved	7440-39-3	mg/l	0.181	---	---	---	---	---	---	---	0.369	0.124	---	---	---	---
Cadmium, Dissolved	7440-43-9	mg/l	0.0002 U	---	---	---	---	---	---	---	0.0002 U	0.013	---	---	---	---
Chromium, Dissolved	7440-47-3	mg/l	0.0007 J	---	---	---	---	---	---	---	0.0008 J	0.0013 J	---	---	---	---
Chromium, Hexavalent- Dissolve	18540-29-9	mg/l	0.005 U	0.003 J	0.002 J	0.001 J	0.003 J	0.003 J	0.003 J	0.002 J	0.006	0.005 U	0.0006 U	0.007	0.009	---
Copper, Dissolved	7440-50-8	mg/l	0.005 U	---	---	---	---	---	---	---	0.0014 J	0.0038 J	---	---	---	---
Lead, Dissolved	7439-92-1	mg/l	0.001 U	---	---	---	---	---	---	---	0.001 U	0.0009 J	---	---	---	---
Mercury, Dissolved	7439-97-6	mg/l	0.0002 U	---	---	---	---	---	---	---	0.0002 U	0.0002 U	---	---	---	---
Nickel, Dissolved	7440-02-0	mg/l	0.0031 J	---	---	---	---	---	---	---	0.0005 J	0.013	---	---	---	---
Selenium, Dissolved	7782-49-2	mg/l	0.001 U	---	---	---	---	---	---	---	0.0005 J	0.001 U	---	---	---	---
Silver, Dissolved	7440-22-4	mg/l	0.0002 U	---	---	---	---	---	---	---	0.0002 U	0.0002 U	---	---	---	---
Zinc, Dissolved	7440-66-6	mg/l	0.0086 J	---	---	---	---	---	---	---	0.004 J	0.018	---	---	---	---
Cyanide, Free	57-12-5	mg/l	0.005 U	0.003	0.005 U	0.006	0.005 U	0.005 U	0.003	0.005 U	0.005 U	0.003	0.005 U	0.05 U	0.05 U	---
Cyanide, Total	57-12-5	mg/l	---	---	---	---	---	---	---	---	---	---	---	0.005 U	0.005 U	---

NOTES:
U = Non-detect, value is reporting limit
J = Estimated, value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

APPENDIX A
GEOPROBE GROUNDWATER DATA
JCI - FOWLERVILLE

		Location ID:	OE01 Water	OE02	OE02	OE03	OE04	OE05	OE06	OE07	OE07	OE07	OE08
		Field ID:	OE01-11-13 062603-01	OE02-08-10 062703-01	OE02-12-14 062703-01	OE03-0611-070703-01	OE04-13-15 062703-01	OE05-0712-070703-01	OE06-0308-070703-01	OE07-0914-070703-01	OE07-0914-070703-02	OE07-16-18 062603-01	OE08-06-08 062603-01
		Date Sampled:	6/26/03	6/27/03	6/27/03	7/7/03	6/27/03	7/7/03	7/7/03	7/7/03	7/7/03	6/26/03	6/26/03
Parameter	CAS #	Units											
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	71-55-6	ug/l	1 U	0.2 J	1 U	10	0.2 J	1 U	1 U	1 U	1 U	1 U	0.6 J
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	ug/l	0.3 J	0.6 J	1 U	2.6	0.1 J	3	0.5 J	1 U	1 U	1 U	0.2 J
1,1-Dichloroethene	75-35-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropylene	563-58-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	87-61-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichloropropane	96-18-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	95-63-6	ug/l	1 U	1 U	1 U	0.2 J	1 U	1 U	1 U	0.2 J	1 U	1 U	0.1 J
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	142-28-9	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	594-20-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorotoluene	95-49-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	591-78-6	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4-Chlorotoluene	106-43-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene	99-87-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	108-10-1	ug/l	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Acetone	67-64-1	ug/l	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Benzene	71-43-2	ug/l	1 U	1 U	1 U	0.4 J	1 U	1 U	0.2 J	1 U	1 U	1 U	0.2 J
Bromobenzene	108-86-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	74-97-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	75-15-0	ug/l	5 U	5 U	5 U	5 U	0.2 J	5 U	5 U	5 U	5 U	0.2 J	5 U
Carbon tetrachloride	56-23-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	ug/l	1 U	1 U	1 U	1 U	1 U	1.5	1 U	1 U	1 U	1 U	1 U
Chloroform	67-66-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	ug/l	1 U	4.3	0.4 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	10061-01-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	124-48-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane	74-95-3	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorobromomethane	75-27-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	75-71-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	ug/l	1 U	1 U	1 U	0.3 J	1 U	1 U	1 U	0.2 J	0.2 J	1 U	0.2 J
Ethylene dibromide	106-93-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	87-68-3	ug/l	5 U	1 U	1 U	5 U	1 U	5 U	5 U	5 U	5 U	1 U	5 U
Isopropylbenzene	98-82-8	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl ethyl ketone	78-93-3	ug/l	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Methyl tert butyl ether	1634-04-4	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene chloride	75-09-2	ug/l	0.4 JB	0.4 JB	0.4 JB	5 U	0.4 JB	5 U	5 U	5 U	5 U	0.4 JB	0.3 JB
n-Butylbenzene	104-51-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene	103-65-1	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene	91-20-3	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
o-Xylene	95-47-6	ug/l	1 U	1 U	1 U	0.3 J	1 U	1 U	1 U	0.2 J	0.2 J	1 U	1 U
sec-Butylbenzene	135-98-8	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	100-42-5	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	98-06-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	108-88-3	ug/l	1 U	0.3 J	1 U	1.2	0.2 J	0.3 J	0.5 J	0.8 J	0.8 J	0.3 J	0.5 J
trans-1,2-Dichloroethylene	156-60-5	ug/l	1 U	0.4 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	10061-02-6	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	79-01-6	ug/l	1 U	50	1	9.2	1 U	1 U	1 U	1 U	1 U	1 U	3.2
Trichlorofluoromethane	75-69-4	ug/l	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	75-01-4	ug/l	1 U	1 U	0.3 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene, Meta + Para	Not Applicable	ug/l	2 U	2 U	2 U	0.7 J	2 U	2 U	2 U	0.6 J	0.6 J	2 U	2 U

NOTES:
U = Non-detect, value is reporting limit
J = Estimated value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

APPENDIX D
GEOPROBE GROUNDWATER DATA
JCI - FOWLERVILLE

		Location	GW32	GW33
		Field ID:	GW32-1417- 102803-01	GW33-0609- 102803-01
		Date Sampled:	10/28/03	10/28/03
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	1 U	1 U
1,1,1-Trichloroethane	71-55-6	ug/l	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	ug/l	1 U	1 U
1,1,2-Trichloroethane	79-00-5	ug/l	1 U	1 U
1,1-Dichloroethane	75-34-3	ug/l	1 U	1 U
1,1-Dichloroethene	75-35-4	ug/l	1 U	1 U
1,1-Dichloropropylene	563-58-6	ug/l	1 U	1 U
1,2,3-Trichlorobenzene	87-61-6	ug/l	1 U	1 U
1,2,3-Trichloropropane	96-18-4	ug/l	1 U	1 U
1,2,4-Trichlorobenzene	120-82-1	ug/l	5 U	5 U
1,2,4-Trimethylbenzene	95-63-6	ug/l	1 U	1 U
1,2-Dibromo-3-chloropropane	96-12-8	ug/l	1 U	1 U
1,2-Dichlorobenzene	95-50-1	ug/l	1 U	1 U
1,2-Dichloroethane	107-06-2	ug/l	1 U	1 U
1,2-Dichloropropane	78-87-5	ug/l	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	ug/l	1 U	1 U
1,3-Dichlorobenzene	541-73-1	ug/l	1 U	1 U
1,3-Dichloropropane	142-28-9	ug/l	1 U	1 U
1,4-Dichlorobenzene	106-46-7	ug/l	1 U	1 U
2,2-Dichloropropane	594-20-7	ug/l	1 U	1 U
2-Chlorotoluene	95-49-8	ug/l	1 U	1 U
2-Hexanone	591-78-6	ug/l	50 U	50 U
4-Chlorotoluene	106-43-4	ug/l	1 U	1 U
4-Isopropyltoluene	99-87-6	ug/l	1 U	1 U
4-Methyl-2-pentanone	108-10-1	ug/l	50 U	50 U
Acetone	67-64-1	ug/l	25 U	4.3 J
Benzene	71-43-2	ug/l	1 U	1 U
Bromobenzene	108-86-1	ug/l	1 U	1 U
Bromochloromethane	74-97-5	ug/l	1 U	1 U
Bromoform	75-25-2	ug/l	1 U	1 U
Bromomethane	74-83-9	ug/l	1 U	1 U
Carbon disulfide	75-15-0	ug/l	5 U	5 U
Carbon tetrachloride	56-23-5	ug/l	1 U	1 U
Chlorobenzene	108-90-7	ug/l	1 U	1 U
Chloroethane	75-00-3	ug/l	1 U	1 U
Chloroform	67-66-3	ug/l	1 U	1 U
Chloromethane	74-87-3	ug/l	1 U	1 U
cis-1,2-Dichloroethene	156-59-2	ug/l	1 U	1 U
cis-1,3-Dichloropropene	10061-01-5	ug/l	1 U	1 U
Dibromochloromethane	124-48-1	ug/l	1 U	1 U
Dibromomethane	74-95-3	ug/l	1 U	1 U
Dichlorobromomethane	75-27-4	ug/l	1 U	1 U
Dichlorodifluoromethane	75-71-8	ug/l	1 U	1 U
Ethylbenzene	100-41-4	ug/l	1 U	1 U
Ethylene dibromide	106-93-4	ug/l	1 U	1 U
Hexachlorobutadiene	87-68-3	ug/l	1 U	1 U
Isopropylbenzene	98-82-8	ug/l	5 U	5 U
Methyl ethyl ketone	78-93-3	ug/l	25 U	25 U
Methyl tert butyl ether	1634-04-4	ug/l	5 U	5 U
Methylene chloride	75-09-2	ug/l	0.19 J	5 U
n-Butylbenzene	104-51-8	ug/l	1 U	1 U
n-Propylbenzene	103-65-1	ug/l	1 U	1 U
Naphthalene	91-20-3	ug/l	5 U	5 U
o-Xylene	95-47-6	ug/l	1 U	1 U
sec-Butylbenzene	135-98-8	ug/l	1 U	1 U
Styrene	100-42-5	ug/l	1 U	1 U
tert-Butylbenzene	98-06-6	ug/l	1 U	1 U
Tetrachloroethene	127-18-4	ug/l	1 U	1 U
Toluene	108-88-3	ug/l	0.66 J	0.94 J
trans-1,2-Dichloroethylene	156-60-5	ug/l	1 U	1 U
trans-1,3-Dichloropropene	10061-02-6	ug/l	1 U	1 U
Trichloroethene	79-01-6	ug/l	1 U	1 U
Trichlorofluoromethane	75-69-4	ug/l	1 U	1 U
Vinyl chloride	75-01-4	ug/l	1 U	1 U
Xylene, Meta + Para	Not Applicable	ug/l	2 U	2 U
Cyanide, Free	57-12-5	mg/l	0.005 U	---

NOTES:
U = Non-detect, value is reporting limit
J = Estimated value below reporting limit
NA = Parameter not analyzed
B = Blank qualified result
--- = Parameter not analyzed

APPENDIX B

BORING LOGS AND WELL COMPLETION REPORTS

WESTON - EARTH TECH

LOG OF BORING GEO-01

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/31/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422362.534
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200519.900
Driller:	: R. Christenson	Ground Elevation:	: 881.626'

Depth in Feet	Surf. Elev. 881.626	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–1.5	881	ML		SILT (ML): black, some fine sand, trace organics, moist	36/60	1	0.0	Elevation is referenced to installation elevation and not to final grade elevation. No return - driller believes that the sand fell out of the sampler
1.5–5	880–877	SW		SAND (SW): black, coarse to medium sand, shell debris (CaCO3) , moist, river/pond sediment				
5–9.7	876–872	SP		SAND (SP): gray, bedded, medium to coarse sand, loose, saturated	60/60	2	0.0	
9.7–10.2		ML		SILT (ML): gray, some sand, saturated				
10.2–10.9	871	SW		SAND (SW): gray, trace silt, saturated	60/60	3	0.0	4" Augers were not set due to a poor confining layer in clay at 11-17.5'
10.9–12.9	870–869	ML/CL		CLAYEY SILT (ML/CL): gray, some sand, very soft, saturated				
12.9–13.4		SW		SAND (SW): gray, trace silt, saturated				
13.4–15	868–867	CL/ML		CLAYEY SILT (ML/CL): gray, some sand, very soft, saturated				
15–17.5	866–865	CL/ML		SILTY CLAY (ML/CL): gray, very soft, holding water	60/60	4	0.0	
17.5–20	864–862	SP		SAND (SP): gray, fine to coarse sand, medium density, saturated				

Well: GEO-01
Elev.: 881.626'

2

20

Hole Diameter: 2 Inches
Sampling Method: Closed Piston, Discrete Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

LOG OF BORING GEO-01

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/31/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422362.534
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200519.900
Driller:	: R. Christenson	Ground Elevation:	: 881.626'

Depth in Feet	Surf. Elev. 881.626	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
20–25	861–857	SP		SAND (SP): gray, fine to coarse sand, medium density, saturated	60/60	5	0.0	Tremmy grouted from base of boring to grade
25–27.5	856–855	SM		SILTY SAND (SM): gray, fine sand, trace clay, loose, saturated				
27.5–31	854–851	ML/CL		SILTY CLAY (ML/CL): blue gray, trace sand and sandstone gravel, very stiff, dry	60/60	6	0.0	Possible weathered shale
31–34	850–848	SS		SANDSTONE (SS): gray to dark gray, quartz sandstone	60/60	7	0.0	

End of Boring @ 34 feet bgs

Well: GEO-01
Elev.: 881.626'

34

Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH	LOG OF BORING GEO-02 (Page 1 of 2)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/31/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422299.526
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200633.940
Driller:	: R. Christenson	Ground Elevation:	: 885.697'

Well: GEO-02
Elev.: 885.697'

Depth in Feet	Surf. Elev. 885.697	USCS	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–4	885.697–881.7	ML	SILT (ML): dark brown, some fine sand, dry, VOC=0.0 ppm	60/60	1	0.0	Elevation is referenced to installation elevation and not to final grade elevation.
4–8.5	881.7–877.2	ML	SILT (ML): dark brown, some fine sand, moist, sheen, strong odor, VOC=37.7 ppm	60/60	2	37.7	
8.5–9.5	877.2–876.2	SM	SILTY SAND (SM): tan to black, fine sand, saturated, sheen, strong odor, VOC=2.0 ppm				
9.5–11	876.2–874.7	SP	SAND (SP): dark gray, coarse sand, saturated, VOC=0.0 ppm	60/60	3	0.0	
11–15.5	874.7–870.2	SP	SAND (SP): gray, fine to medium sand, saturated				
15.5–17	870.2–868.7	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry	60/60	4	0.0	4" Augers set into clay at 20' to prevent any cross contamination
17–18.5	868.7–867.2	SM	SILTY SAND (SM): gray, medium to coarse sand, trace clay, saturated				
18.5–20	867.2–865.7	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, dry, very stiff				

Hole Diamater: 2 inches, 4 inches augers to 20 ft
Sampling Method: Closed Piston, Discrete Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH	LOG OF BORING GEO-02
	(Page 2 of 2)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: Date: Drilling Method: Subcontractor: Driller:	: Fowlerville, MI : 7/31/03 : Geoprobe : Stearns Drilling : R. Christenson	Geologist: Checked By: Northing Coordinate: Easting Coordinate: Ground Elevation:	: C. Kotke : P. Mcguire : 422299.526 : 13200633.940 : 885.697'	

Depth in Feet	Surf. Elev. 885.697	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS	Well: GEO-02 Elev.: 885.697'
20–24	865–862	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, very stiff	60/60	5	0.0		
24		SM							
24–29	861–857	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, very stiff	60/60	6	0.0	tremmy grouted to grade using a bentonite slurry mix	
29–30	856	SH/SS		SANDSTONE AND SHALE (SH/SS): Blue to dark gray, weathered to platey, shale, gray to dark gray, sandstone					30
				End of Boring @ 30 feet bgs					

Depth scale: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40

Elevation scale: 865, 864, 863, 862, 861, 860, 859, 858, 857, 856, 855, 854, 853, 852, 851, 850, 849, 848, 847, 846

Hole Diamater: 2 inches, 4 inches augers to 20 ft
Sampling Method: Closed Piston, Discrete Sampler
Drill Rig: Geoprobe 66DT

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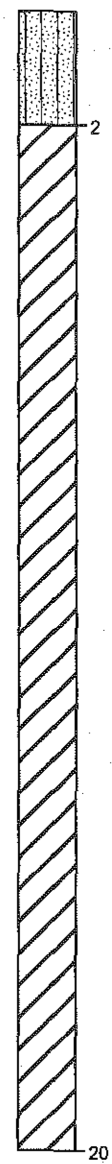
WESTON - EARTH TECH	LOG OF BORING GEO-03
	(Page 1 of 2)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: : Fowlerville, MI Date: : 8/1/03 Drilling Method: : Geoprobe Subcontractor: : Stearns Drilling Driller: : R. Christenson
	Geologist: : C. Kotke Checked By: : P. Mcguire Northing Coordinate: : 422195.976 Easting Coordinate: : 13200716.080 Ground Elevation: : 883.354'

Depth in Feet	Surf. Elev. 883.354	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–5	883–879	SP		SAND (SP): tan, fine to medium fill sand, trace silt, moist, loose	60/60	1	0.0	Elevation is referenced to installation elevation and not to final grade elevation.
5	878	AR		SLUDGE (AR): Black oil in sand and brick fragments				4" Augers set into clay at 15' to prevent any cross contamination
5–6.5	877	SP		SAND (SP): Black, oil sludge stain, fine to coarse sand, saturated	60/60	2	0.0	
6.5–8	876	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, stiff, damp				
8–10	875–874	CL		CLAY (CL): gray, some sand, trace silt, moist				
10–11.5	873–872	SP		SAND (SP): gray, coarse sand, saturated	60/60	3	0.0	
11.5–13	871	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry				
13	870	ML		SILT (ML): gray, some sand, saturated				
13.5–17	869–867	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry				
17	866	SM		SILTY SAND (SM): gray, trace clay	60/60	4	0.0	
17.5–19	865	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, stiff				
19	864	SM		SILTY SAND (SM): gray, trace clay				
19.5–20		CL/ML		SILTY CLAY (CL/ML): gray, trace sand				

Well: GEO-03
Elev.: 883.354'



Hole Diamater: 2 inches, 4 inches augers to 15 ft
Sampling Method: Closed Piston, Discrete Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH	LOG OF BORING GEO-03 (Page 2 of 2)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/1/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422195.976
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200716.080
Driller:	: R. Christenson	Ground Elevation:	: 883.354'

Depth in Feet	Surf. Elev. 883.354	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
20	863	CL/ML						
20–23	863–860	CL		CLAY (CL): gray, some sand, trace silt and sandstone gravel, very dense, moist	60/60	5	0.0	Tremmy grouted from base of boring to grade
23–30	860–853	SH/SS		SANDSTONE AND SHALE (SH/SS): Blue to dark gray, weathered to platey, shale and gray to dark gray, quartz sandstone	60/60	6	0.0	
30	853			End of Boring @ 30 feet bgs				

Depth scale 20–40 ft; Surf. Elev. scale 863–844.

Well: GEO-03
Elev.: 883.354'
30

Hole Diamater: 2 inches, 4 inches augers to 15 ft
Sampling Method: Closed Piston, Discrete Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

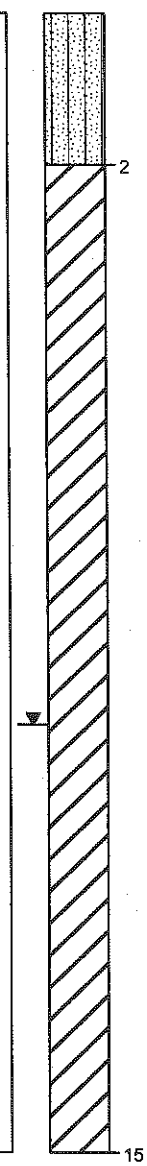
LOG OF BORING GEO-05

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/5/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422456.537
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200737.780
Driller:	: R. Christenson	Ground Elevation:	: 886.636'

Well: GEO-05
Elev.: 886.636'

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–6.5		SP		SAND (SP): tan, fine to medium grain fill sand, trace silt, very dense, moist	60/60	1	0.0	Elevation is referenced to installation elevation and not to final grade elevation.
6.5–8		SP		SAND (SP): gray, fine to medium sand, trace silt, loose, moist	60/60	2	0.0	
8–9		CL/ML		SILTY CLAY (CL/ML): gray, trace sand, stiff, dry				
9–11.5		SP		SAND (SP): gray, fine to coarse sand, trace silt, medium dense, saturated				
11.5–15		CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, damp to dry	60/60	3	0.0	4" Augers set into clay at 15' to prevent cross contamination



Hole Diamater: 2 inches, 4 inches augers to 15 ft
Sampling Method: Closed Piston, Discrete Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

LOG OF BORING GEO-05

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/5/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422456.537
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200737.780
Driller:	: R. Christenson	Ground Elevation:	: 886.636'

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
15		CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, damp to dry	60/60	4	0.0	
16		SM		SILTY SAND (SM): gray, fine to coarse sand, medium dense, saturated				
19		CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, very stiff				
22		SM		SILTY SAND (SM): gray, fine to coarse sand, loose, saturated	60/60	5	0.0	Lost sampler when head broke on rods at 25-30' interval. No sample taken.
23.5		CL/ML		SILTY CLAY (CL/ML): gray, trace sand				
24		SM		SILTY SAND (SM): gray, fine to coarse sand, some clay, dense, very most to saturated				
25				End of Boring @ 25 feet bgs				

Well: GEO-05
Elev.: 886.636'

30

Hole Diamater: 2 inches, 4 inches augers to 15 ft
Sampling Method: Closed Piston, Discrete Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

LOG OF BORING GW-23

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/6/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422534.334
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200864.080
Driller:	: R. Christenson	Ground Elevation:	: 883.688'

Well: GW-23
Elev.: 883.688'

Depth in Feet	Surf. Elev. 883.688'	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–7.5	883.688–876.2	ML		SILT (ML): brown, some fine sand and clay, stiff, dry	60/60	1	0.0	
7.5–9.5		CL/ML		SILTY CLAY (CL/ML): gray, trace sand, stiff, dry	60/60	2	0.0	
9.5–10.5		SP		SAND (SP): gray, fine to medium sand, loose, saturated				Screen Point 15 set at 10-13.5'
10.5–15		SP		SAND (SP): gray, medium to coarse sand, loose, saturated	60/60	3	0.0	
				End of Boring @ 15 feet bgs				

Well screen: 10 – 13.5

Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

LOG OF BORING GW-24

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/8/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422650.803
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200780.130
Driller:	: R. Christenson	Ground Elevation:	: 884.590'

Depth in Feet	Surf. Elev. 884.590	USCS	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–4.5	884.590–880.1	SP	SAND (SP): tan, fine to coarse fill sand, moist	60/60	1	0.0	
4.5–5.5		PT	ORGANICS/PEAT (PT): black, organics, moist				
5.5–9.25		CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry	60/60	2	0.0	
9.25–11		SP	SAND (SP): gray, medium to coarse sand, trace silt, loose, saturated				Screen Point 15 set at 9.5-13' water sample taken
11–15		ML	SILT (ML): tan, trace fine sand, medium dense, saturated	60/60	3	0.0	

End of Boring @ 15 feet bgs

Well: GW-24
Elev.: 884.590'

Screen interval: 9.5 – 13

Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

LOG OF BORING GW-25

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/8/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422726.025
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200847.420
Driller:	: R. Christenson	Ground Elevation:	: 895.347'

Well: GW-25
Elev.: 895.347'

Depth in Feet	Surf. Elev. 895.347'	USCS	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–4.5	895–891	SP	SAND (SP): tan, fine to coarse fill sand, moist	60/60	1	0.0	
4.5–5		PT	ORGANICS/PEAT (PT): black, organics, moist				
5–6.5	890–889	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry	60/60	2	0.0	Screen Point 15 set at 5.5-9', No water produced
6.5–7.5	888	ML	SILT (ML): gray, medium dense, saturated				
7.5–15	887–881	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry	60/60	3	0.0	
15–19.5	880–876	SP	SAND (SP): gray, medium to coarse sand, loose, saturated	60/60	4	0.0	Screen Point 15 set at 15.5-19' water sample taken
19.5–20	875	CL/ML	SILTY CLAY (CL/ML): gray, trace sand				

End of Boring @ 20 feet bgs

Well screen: 15.5 – 19

Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

LOG OF BORING GW-26

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/7/03	Checked By:	: M. Pozniak
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422737.612
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200669.590
Driller:	: R. Christenson	Ground Elevation:	: 883.190'

Depth in Feet	Surf. Elev. 883.190	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–2.5	883–881	GW		GRAVEL (GW): tan, some silt, dry	60/60	1	0.0	
2.5–5	880–879	PT		ORGANICS/PEAT (PT): black, organics, dry				
5–9.5	878–874	SW		SAND (SW): gray, fine to coarse sand, some silt, saturated	60/60	2	0.0	Screen Point 15 set at 6.5-10' water sample taken
9.5–10	873	ML		SILT (ML): tan, trace gravel, saturated				

End of Boring @ 10 feet bgs

Well: GW-26
Elev.: 883.190'

6.5

10

Depth in Feet: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Surf. Elev.: 883, 882, 881, 880, 879, 878, 877, 876, 875, 874, 873, 872, 871, 870, 869

Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

LOG OF BORING GW-29

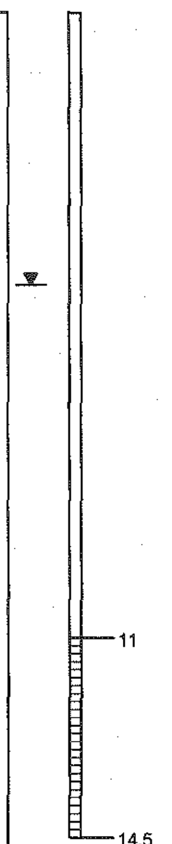
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/6/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422516.659
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200611.860
Driller:	: R. Christenson	Ground Elevation:	: 880.962'

Depth in Feet	Surf. Elev. 880.962'	USCS	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–5	880–876	PT	ORGANICS/PEAT (PT): black, organics, moist	60/60	1	0.0	
5–7.5	876–873.5	SW	SAND (SW): brown to gray, fine to medium sand, some silt, moist to saturated	60/60	2	0.0	
7.5–10	873.5–871	ML	SILT (ML): gray, trace fine sand, medium dense, saturated				
10–11	871–870	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry	60/60	3	0.0	Screen Point 15 set at 11-14.5'
11–15	870–866	SM	SILTY SAND (SM): gray, fine to coarse sand, loose, saturated				
15	866		End of Boring @ 15 feet bgs				

Depth	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Elev.		880	879	878	877	876	875	874	873	872	871	870	869	868	867	866	865	864	863	862	861

Well: GW-29
Elev.: 880.962'



Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

LOG OF BORING GW-30

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/7/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422570.930
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200674.220
Driller:	: R. Christenson	Ground Elevation:	: 881.327'

Depth in Feet	Surf. Elev. 881.327	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0–5	881–877	ML		SILT (ML): dark gray to gray, some clay, dry	60/60	1	0.0	
5–8	876–874	ML		SILT (ML): gray, saturated	60/60	2	0.0	Screen Point 15 set @ 7.5-11'
8–11	873–871	SW		SAND (SW): gray, fine to coarse sand, some silt, saturated				
11	870			End of Boring @ 11 feet bgs				

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
Elevation scale: 881, 880, 879, 878, 877, 876, 875, 874, 873, 872, 871, 870, 869, 868, 867

Well: GW-30
Elev.: 881.327'

7.5

11

Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

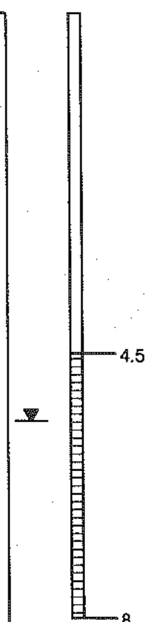
LOG OF BORING GW-31

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/7/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422662.443
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200691.000
Driller:	: R. Christenson	Ground Elevation:	: 882.123'

Depth in Feet	Surf. Elev. 882.123	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0	882	PT		ORGANICS/PEAT (PT): black, organics, dry				
1	881							
2	880	SP		SAND (SP): tan to gray, fine to medium sand, trace silt, moist	60/60	1	0.0	
3	879							
4	878							Screen Point 15 set @ 4.5-8'
5	877							
6	876			SAND (SP): tan to gray, fine to medium sand, trace silt, saturated				
7	875				60/60	2	0.0	
8	874	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, stiff, dry				
9	873							
10	872			End of Boring @ 10 feet bgs				
11	871							
12	870							
13	869							
14	868							
15								

Well: GW-31
Elev.: 882.321'



Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

LOG OF BORING GW-32

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 10/28/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	:
Subcontractor:	: Stearns Drilling	Easting Coordinate:	:
Driller:	: R. Christenson	Ground Elevation:	:

Depth in Feet	Surf. Elev.	USCS	DESCRIPTION	Recovery (inches)	Samples	REMARKS	Well: GW-32 Elev.:
0–6		SM	SILTY SAND (SM): dark brown, topsoil, moist, bermed area, fill	60/60	1		
6			ORGANIC LAYER: grass layer				
6–8		SM	SILTY SAND (SM): dark gray, dry, loose	60/60	2		
8–14		ML/CL	SILTY CLAY (ML/CL): light gray, trace angular coarse sand, stiff, dry	60/60	3	Screen Point 15 set at 13.5-17'	13.5
14–15.5		SP	SAND (SP): gray, coarse angular sand, trace silt, loose, saturated				
15.5–20		ML/CL	SILTY CLAY (ML/CL): gray, trace semi-angular coarse sand, medium dense, moist	60/60	4		17
20			End of Boring @ 20 feet bgs				

Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH	LOG OF BORING GW-33 (Page 1 of 1)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

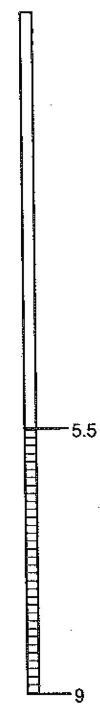
Location: : Fowlerville, MI
Date: : 10/28/03
Drilling Method: : Geoprobe
Subcontractor: : Stearns Drilling
Driller: : R. Christenson

Geologist: : C. Kotke
Checked By: : P. Mcguire
Northing Coordinate: :
Easting Coordinate: :
Ground Elevation: :

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–4		SM		SILTY SAND (SM): tan to gray, some clay, medium dense, cohesive	60/60	1	
4–5.5		PT		PEAT (PT): black, wood fragments, moist			
5.5–6		SP		SAND (SP): gray, fine to medium sand, saturated, dense			Screen Point 15 set at 5.5-9'
6–7.8		ML		SILT (ML): dark gray, some sand, trace clay, saturated, medium dense	60/60	2	
7.8–9.5		SM		SILTY SAND (SM): gray, fine sand, saturated, loose			
9.5–10		ML/CL		SILTY CLAY (ML/CL): gray, trace angular coarse sand			

End of Boring @ 10 feet bgs

Well: GW-33
Elev.:



Hole Diamater: 2 inches
Sampling Method: Closed Piston, Discrete Sampler, Screen Point 15 Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

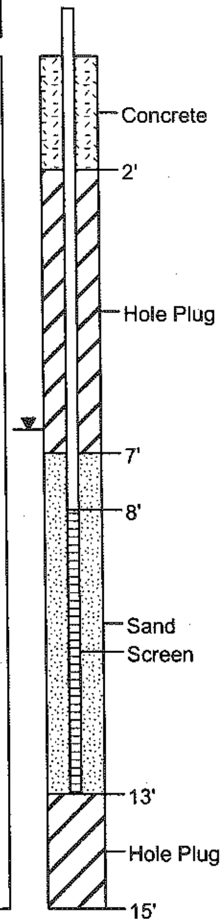
LOG OF BORING MW-01

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/28/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422121.148
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201258.472
Driller:	: R. Christenson	Ground Elevation:	: 888.964'

Depth in Feet	Surf. Elev. 888.964	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0		GM		SILTY GRAVEL (GM): brown, trace sand, dry	60/60	1	Elevation is referenced to installation elevation and not to final grade elevation. Water Depth-9.08' TOC 10/06/03
1	888	ML		SILT (ML): dark brown, some fine sand, dry			
2	887	SP		SAND (SP): light brown, fine to medium, moist			
3	886						
4	885	CL/ML		SILTY CLAY (CL/ML): light brownish gray, some fine to coarse sand, stiff, moist			
5	884				60/60	2	
6	883	CL/ML		SILTY CLAY (CL/ML): pink, some fine to coarse sand, stiff, moist			
7	882	CL/ML		SILTY CLAY (CL/ML): light brownish gray, some fine to coarse sand, stiff, moist			
8	881						
9	880	SM		SILTY SAND (SM): gray, fine to coarse sand, trace clay, moist			
10	879	CL/ML			60/60	3	
		SP		SAND (SP): light brown, fine to medium, saturated			
11	878	GP		GRAVEL (GP): gray, semi-rounded, some sand, saturated			
12	877	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, stiff, damp			
13	876						
14	875	ML		SILT (ML): gray, silt, saturated			
		GP		GRAVEL (GP): gray, semi-angular, loose, saturated			
15	874			End of Boring @ 15 feet bgs			
16	873						
17	872						
18	871						
19	870						
20	869						

Well: MW-01
Elev.: 888.964'



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Closed Piston Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

LOG OF BORING MW-02

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/28/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422068.326
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201263.505
Driller:	: R. Christenson	Ground Elevation:	: 888.087'

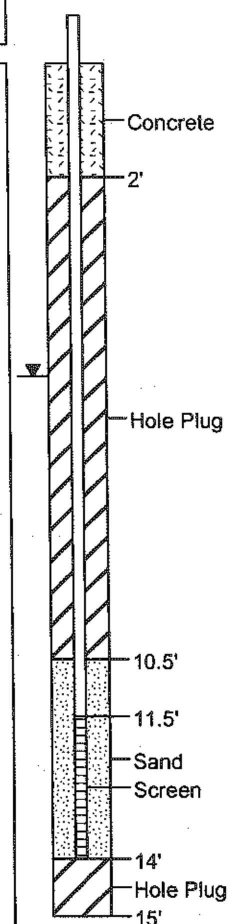
Depth in Feet	Surf. Elev. 888.087	USCS	DESCRIPTION	Recovery (inches)	Samples
0	888	SP	SAND (SP): brown, fine to medium, fill, dry	24/60	1
4	884	GP	GRAVEL (GP): Fill, dry		
5	883	ML/CL	CLAYEY SILT (ML/CL): gray, trace sand, moist	60/60	2
7	881	SM	SILTY SAND (SM): gray, trace clay, moist		
		ML	SILT (ML): gray, fine, sand, saturated		
8	880	CL/ML	SILTY CLAY (CL/ML): gray, trace sand		
		SP	SAND (SP): gray, fine, trace silt, saturated		
9	879	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry		
10	878			60/60	3
12	876	ML	SILT (ML): gray, trace fine sand, saturated		
13	875	SP	SAND (SP): gray, coarse, saturated		
14	874	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, damp		
15	873	SC	CLAYEY SAND (SC): gray, fine to medium, trace silt, soft, very moist	60/60	4
19	869	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry		
20					

REMARKS

Elevation is referenced to installation elevation and not to final grade elevation. Water Level-8.01' TOC 10/06/03

Well installed in a boring to 15'. A Deeper boring was advanced to 30', approx. 3 ft. west. Augers were placed down to 16' to prevent any cross contamination. Deep boring was abandond using tremmy grout.

Well: MW-02
Elev.: 888.087'



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Discrete Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH	LOG OF BORING MW-02 (Page 2 of 2)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: : Fowlerville, MI Date: : 7/28/03 Drilling Method: : Geoprobe Subcontractor: : Stearns Drilling Driller: : R. Christenson	Geologist: : C. Kotke Checked By: : P. Mcguire Northing Coordinate: : 422068.326 Easting Coordinate: : 13201263.505 Ground Elevation: : 888.087'

Well: MW-02
Elev.: 888.087'

Depth in Feet	Surf. Elev. 888.087	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
20–22	868–866	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry	60/60	5	
22–23	866–865	SM		SANDY SILT (SM): gray, fine sand, trace clay, medium stiff saturated			
23–24.7	865–863	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry			
~25	863	LS					Limestone cobble
25–30	863–858	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry	60/60	6	

End of Boring @ 30 feet bgs

Depth scale: 20–40 feet (elevations 868–849)

Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Discrete Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

LOG OF BORING MW-03

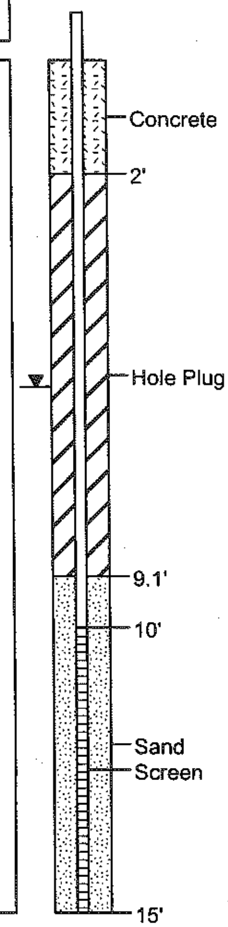
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/29/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 421997.377
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201241.721
Driller:	: R. Christenson	Ground Elevation:	: 888.136'

Depth in Feet	Surf. Elev. 888.136
0	888
1	887
2	886
3	885
4	884
5	883
6	882
7	881
8	880
9	879
10	878
11	877
12	876
13	875
14	874
15	873
16	872
17	871
18	870
19	869
20	

USCS	DESCRIPTION	Recovery (inches)	Samples	REMARKS
SP	SAND (SP): brown, fine, trace organics, moist	24/60	1	Elevation is referenced to installation elevation and not to final grade elevation. Water Level-8.26' TOC 10/06/03
SC	CLAYEY SAND (SC): brown, fine to medium, trace silt, moist	60/60	2	
SM	SILTY SAND (SM): gary, fine to medium, trace clay, saturated			
CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, damp			
ML				at 9.25' SILT (ML): gray, saturated
CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry			
SP	SAND (SP): gray, fine to medium, saturated, loose	60/60	3	
GP	GRAVEL (GP): gray, sub-angular, saturated			
SP	SAND (SP): gray, medium to coarse, saturated, loose			
CL/ML	SILTY CLAY (CL/ML): gray, some fine to medium sand, medium soft, very moist			
	End of Boring @ 15 feet bgs			

Well: MW-03
Elev.: 888.136'



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Discrete Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

LOG OF BORING MW-03C

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/2/03-9/17/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422000.248
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201240.950
Driller:	: B. Graham	Ground Elevation:	: 888.167'

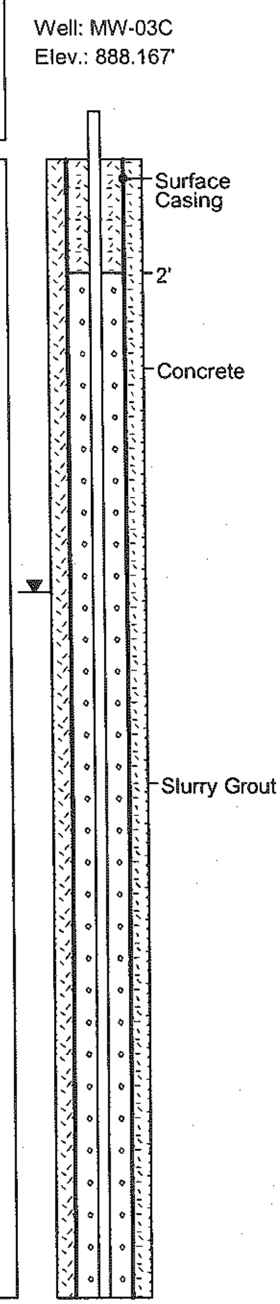
Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples
0–5	SP	SAND (SP): brown, fine, trace organics, moist		1
5–5.75	SC	SANDY CLAY (SC): brown, trace silt		2
5.75–8.4	SM	SANDY SILT (SM): gary, fine to medium, trace clay, saturated		2
8.4–9.2	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff		2
9.5–10	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry		2
10–12	SP	SAND (SP): gray, fine to medium, saturated, loose		3
12–12.75	GP	GRAVEL (GP): gray, sub-angular, saturated		3
12.75–14	SP	SAND (SP): gray, medium to coarse, saturated, loose		3
14–15	CL/ML	SILTY CLAY (CL/ML): gray, fine to medium sand, medium soft, very moist		3
15–19	SC	SANDY CLAY (SC): gray, moist	0 0 3 2	4
			NR	5
19–20	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry	6 11	6

REMARKS

Elevation is referenced to installation elevation and not to final grade elevation.

Water Level-7.63' TOC 10/06/03

Blind drill from 0-15 feet. Used MW-03 log for 0-15 feet



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

WESTON - EARTH TECH	LOG OF BORING MW-03C
	(Page 2 of 3)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/2/03-9/17/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422000.248
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201240.950
Driller:	: B. Graham	Ground Elevation:	: 888.167'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
20	CL/ML		12, 13	6	
21	CL/ML	SILTY CLAY (CL/ML): gray, trace sand and gravel (sub-angular to sub rounded), very hard, dry	11, 12, 50, 26	7	
			11, 29, 27, 30	8	
25	SM	SILTY SAND (SM): gray, trace clay	9		
26	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, gravel (sub-angular to sub rounded), very hard, dry	22, 31, 44	9	
			14, 40, 44, 43	10	
			19, 44, 50, 59	11	
31	CL/ML	SILTY CLAY (CL/ML): gray, trace sand and gravel (sub-angular to sub rounded), very hard, dry	35, 45, 46, 51	12	
			28, 42, 77, 50	13	
			35, 32, 37, 32	14	
37	SL	SILTSTONE (SL): blue green			
37–40	SS/SL	SANDSTONE/SILTSTONE (SS/SL): blue green, siltstone, with thin (<3") horizantally fractured zones of sandstone		15	Core Barrel used to take continuous core to depth from 37'

Well: MW-03C
Elev.: 888.167'

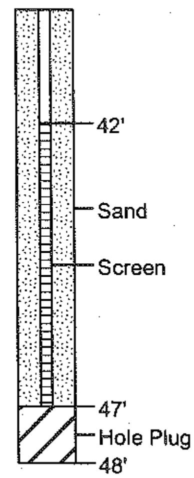
Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

WESTON - EARTH TECH	LOG OF BORING MW-03C
	(Page 3 of 3)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: : Fowlerville, MI Date: : 9/2/03-9/17/03 Drilling Method: : CME 750 Subcontractor: : Stearns Drilling Driller: : B. Graham	Geologist: : C. Kotke Checked By: : P. Mcguire Northing Coordinate: : 422000.248 Easting Coordinate: : 13201240.950 Ground Elevation: : 888.167'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
40–48	SS/SL		SANDSTONE/SILTSTONE (SS/SL): blue green, siltstone, with thin (<3") horizantally fractured zones of sandstone		15	
					16	
48			End of Boring @ 48 feet bgs			

Well: MW-03C
Elev.: 888.167'



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

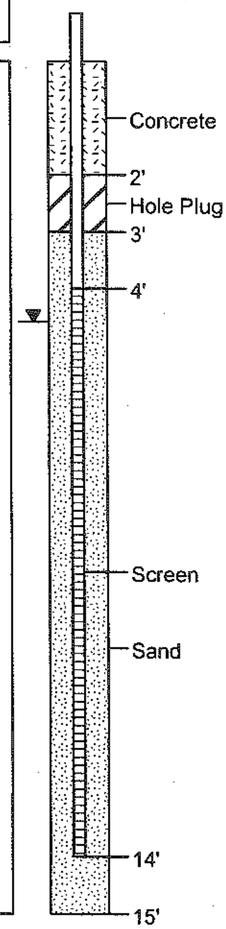
LOG OF BORING MW-04

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: B. Earl
Date:	: 9/5/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 421948.025
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201241.300
Driller:	: T. Ulrich	Ground Elevation:	: 887.909'

Depth in Feet	Surf. Elev. 887.909	USCS	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0		SM	Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation.
1	887					
2	886					
3	885				1	
4	884	SM				Water Level-7.59' TOC 10/06/03
5	883		Fill Sand			
6	882					
7	881					
8	880	CL	CLAYEY SAND (SC): brown, some silt, trace gravel, soft, high plasticity, very moist		2	
9	879	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, low plasticity			
10	878	SP	SAND (SP): gray, medium to coarse, saturated, loose			
11	877					
12	876	SP				
13	875				3	
14	874	CL/ML	SILTY CLAY (CL/ML): gray, trace sand and gravel, soft, high plasticity, very moist			
15	873		End of Boring 15 feet bgs			
16	872					
17	871					
18	870					
19	869					
20	868					

Well: MW-04
Elev.: 887.909'



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Closed Piston Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH	LOG OF BORING MW-05
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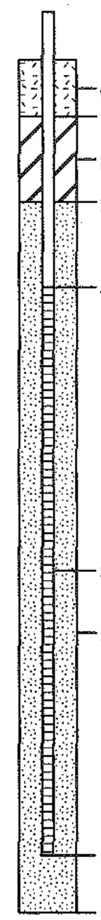
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: B. Earl
Date:	: 9/3/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422047.431
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201090.710
Driller:	: T. Ulrich	Ground Elevation:	: 888.525'

Depth in Feet	Surf. Elev. 888.525	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–6	888.525–882.5	SM		FILL SAND FILL SAND		1 (0–5) 2 (5–10)	Elevation is referenced to installation elevation and not to final grade elevation. Water Level-8.96' TOC 10/06/03
6–11		GW		GRAVEL (GW): gray, some fine sand, trace silt, medium dense, saturated		3 (10–15)	
11–12		SP		SAND (SP): gray, medium to coarse, saturated, loose			
12–14		GP		GRAVEL (GP): gray, some coarse sand, loose, saturated			
14–15		CL/ML		SILTY CLAY (CL/ML): gray, trace sand and gravel, stiff, low plasticity, dry			

End of Boring 15 feet bgs

Well: MW-05
Elev.: 888.525'



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Closed Piston Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH

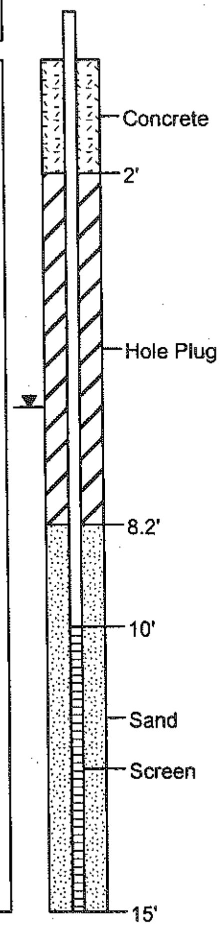
LOG OF BORING MW-06

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/29/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422193.245
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201106.285
Driller:	: R. Christenson	Ground Elevation:	: 887.881'

Depth in Feet	Surf. Elev. 887.881	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0		AR		CONCRETE (AR)	60/60	1	Elevation is referenced to installation elevation and not to final grade elevation.
1	887	ML		SILT (ML): dark brown, some fine to coarse sand, trace clay, dry			
2	886						
3	885	ML		SILT (ML): tan, some fine to coarse sand, trace clay, dry			
4	884	ML		SILT (ML): tan, saturated			Water Level-8.41' TOC 10/06/03
5	883	AR		BRICK (AR)	60/60	2	
6	882	ML		SILT (ML): gray, some medium to fine sand, clay, moist			
7	881						
8	880	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, stiff, damp			
9	879						
10	878	SP		SAND (SP): gray, medium to coarse, saturated	60/60	3	
11	877						
12	876	SP		SAND (SP): gray, coarse, saturated			
13	875	SP		SAND (SP): gray, coarse to medium, saturated			
14	874	CL/ML		SILTY CLAY (CL/ML): gray, some fine to medium sand, medium soft, very moist			
15	873			End of Boring @ 15 feet bgs			
16	872						
17	871						
18	870						
19	869						
20	868						

Well: MW-06
Elev.: 887.881'



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Closed Piston Sampler
Drill Rig: Geoprobe 66DT

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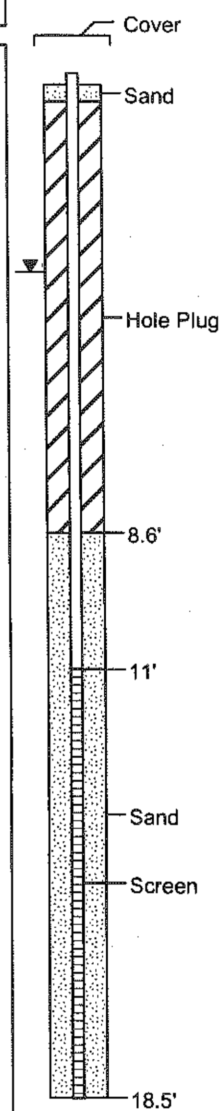
WESTON - EARTH TECH

LOG OF BORING MW-07

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/30/03	Checked By:	: M. Pozniak
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422307.608
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201172.033
Driller:	: R. Christenson	Ground Elevation:	: 886.306'

Depth in Feet	Surf. Elev. 886.306	USCS	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0	886	AR	BLACK TOP (AR)	60/60	1	Elevation is referenced to installation elevation and not to final grade elevation.
0.5–2	885	ML	SILT (ML): black to dark brown, some fine sand, trace clay, stiff, dry			
2	884	CL/ML	SILTY CLAY (CL/ML): blue gray, trace sand, stiff, moist			
3.5	883	CL/ML	SILTY CLAY (CL/ML): pinkish gray, trace sand, stiff, damp			Water Level-3.50' TOC 10/06/03
4.25	882	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, medium soft, damp			
5	881–877	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, medium soft, damp	60/60	2	
10	876–875	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, stiff, dry	60/60	3	
12	874	ML	SILT (ML): gray, saturated			
12.5		CL/ML	SILTY CLAY (CL/ML): gray, trace sand			
13	873–869	SP	SAND (SP): gray, coarse to medium, loose, saturated	60/60	4	well installed in a boring to 18.5'. A deeper boring was advanced to 30', approx. 3 ft. north. Augers were placed down to 21' to prevent any cross contamination. Deep boring was abandond using tremmy grout.
18	868–867	CL	CLAYEY SAND (SC): gray, fine to medium sand, trace silt, stiff, damp			
20						



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Closed Piston Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

LOG OF BORING MW-07

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/30/03	Checked By:	: M. Pozniak
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422307.608
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201172.033
Driller:	: R. Christenson	Ground Elevation:	: 886.306'

Well: MW-07
Elev.: 886.306'

Depth in Feet	Surf. Elev. 886.306	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
20	866	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry			
21	865						
22	864				60/60	5	
23	863						
24	862						
25	861						
26	860						
27	859						
28	858	SW		SAND (SW): gray, fine to coarse sand, trace rounded gravel and silt, very dense, moist	60/60	6	
		CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry			
29	857						
30	856			End of Boring @ 30 feet bgs			
31	855						
32	854						
33	853						
34	852						
35	851						
36	850						
37	849						
38	848						
39	847						
40							

Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Closed Piston Sampler
Drill Rig: Geoprobe 66DT

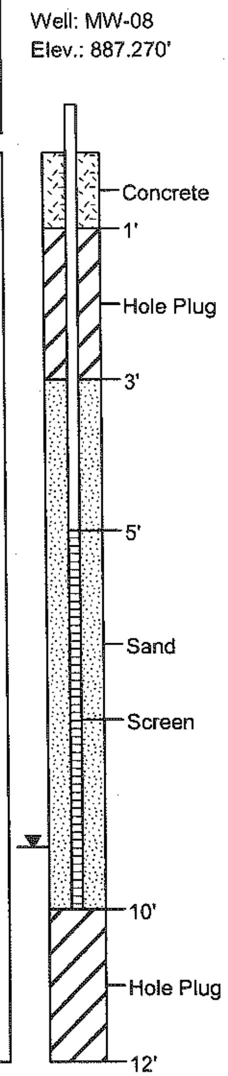
WESTON - EARTH TECH

LOG OF BORING MW-08

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/23/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 850	Northing Coordinate:	: 421989.363
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200878.540
Driller:	: D. Daverman	Ground Elevation:	: 887.270'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–6	SM		Blind Drill - Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation. Water Level-9.18' TOC 10/06/03
6–8	GP		No Return - Fill Gravel	8, 14, 17, 12	1	Blind Drill through fill sand to 6 feet
8–10	SP		SAND (SP): gray, medium to coarse, saturated, loose	7, 10, 13, 11	2	
10–12	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, non-plastic		3	
12			End of Boring 12 feet bgs			



Hole Diamater: 4 inch augers, 2 inch split spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

WESTON - EARTH TECH	LOG OF BORING MW-09
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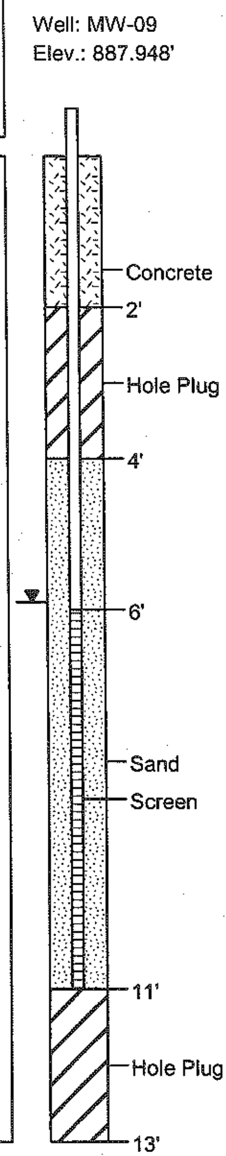
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/18/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 850	Northing Coordinate:	: 422225.038
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200955.310
Driller:	: D. Daverman	Ground Elevation:	: 887.948'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–4	SW	SAND (SW): brown, fine to medium, fill sand, some silt	13, 9, 13, 9	1	Elevation is referenced to installation elevation and not to final grade elevation.
			2, 2, 2, 3	2	
4–9.5	CL/ML	SILTY CLAY (CL/ML): gray with brown mottling, fine to medium sand, thin sand lenses (saturated) ,dry, dense	NR	3	Water Level-7.90' TOC 10/06/03
			2, 3, 4, 5	4	
			2, 4, 10, 11	5	
9.5–11	SP	SAND (SP): gray, fine to medium sand, saturated, loose	2	6	
11–13	CL/ML	SILTY CLAY (CL/ML): gray, fine to coarse sand, very soft, very moist		7	Blind Drill to 11 feet and set well. Log is referenced to MW-09C.

End of Boring 13 feet bgs



Hole Diamater: 4 inch augers, 2 inch split spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

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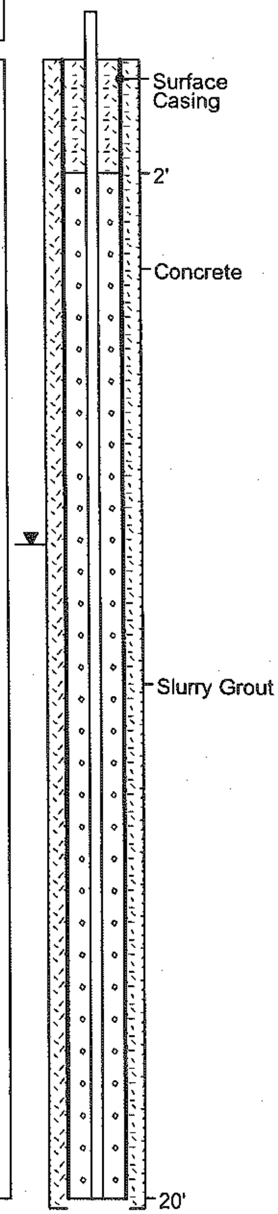
WESTON - EARTH TECH	LOG OF BORING MW-09B (Page 1 of 2)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location:	: Fowlerville, MI	Geologist:	: C. Kotke
	Date:	: 9/17/03-9/23/03	Checked By:	: P. Mcguire
	Drilling Method:	: CME 750, CME 850	Northing Coordinate:	: 422218.936
	Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200960.480
	Driller:	: B. Graham, D. Daverman	Ground Elevation:	: 887.413'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–2	SW		SAND (SW): brown, fine to medium fill sand, some silt, dry	13, 9, 13, 9	1	Elevation is referenced to installation elevation and not to final grade elevation.
2–4	SW			2, 2, 2, 3	2	
4–6	CL/ML		SILTY CLAY (CL/ML): gray with brown mottling, fine to medium, sand lenses (saturated), dry, dense	NR	3	Water Level-8.55' TOC 10/06/03
6–8	CL/ML			2, 3, 4, 5	4	
8–10	CL/ML			2, 4, 10, 11	5	
9.5–12	SP		SAND (SP): gray, fine to medium sand, saturated, loose	2, 3, 7, 3	6	
12.5–14	CL/ML		SILTY CLAY (CL/ML): gray, fine to coarse sand, very soft, very moist	2, 1, 1, 2	7	
14–16	CL/ML			1, 2, 1, 2	8	
16–18	CL/ML			2, 4, 7, 7	9	
18–20	CL/ML		SILTY CLAY (CL/ML): gray, fine to coarse sand, very stiff, dry	8, 20, 13, NR	10	Geotech sample at 20-22 feet (ML/CL)

Well: MW-09B
Elev.: 887.413'



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750, 850

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WESTON - EARTH TECH

LOG OF BORING MW-09B

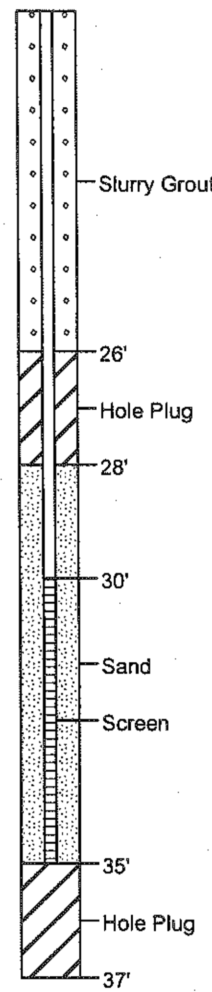
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/17/03-9/23/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750, CME 850	Northing Coordinate:	: 422218.936
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200960.480
Driller:	: B. Graham, D. Daverman	Ground Elevation:	: 887.413'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
20–23	CL/ML	SILTY CLAY (CL/ML): gray, trace gravel and sand, dry, dense	4, 11, 14, 18	11	Geotech sample at 20-22 feet (ML/CL)
			18, 9, 11, 20	12	
23–24	SW	SAND (SW): gray, fine to medium sand, some silt, saturated, med dense			
24–32	CL/ML	SILTY CLAY (CL/ML): gray, fine to coarse sand, very stiff, dry, with <1/8" saturated sand seams	9, 17, 19, 22	13	
			11, 9, 20, 27	14	
			12, 24, 36, 45	15	
			11, 34, 42, 41	16	
32–35	SM	SILTY SAND (SM): gray, fine to medium sand, trace clay, moist, dense, slightly cohesive	16, 29, 39, 31	17	
			10, 19, 33, 35	18	Confirmation sample taken at 35-37 feet (ML/CL)
35–37	CL/ML	SILTY CLAY (CL/ML): gray, trace gravel and sand, dry, dense	4, 28	19	

End of Boring 37 feet bgs

Well: MW-09B
Elev.: 887.413'



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750, 850

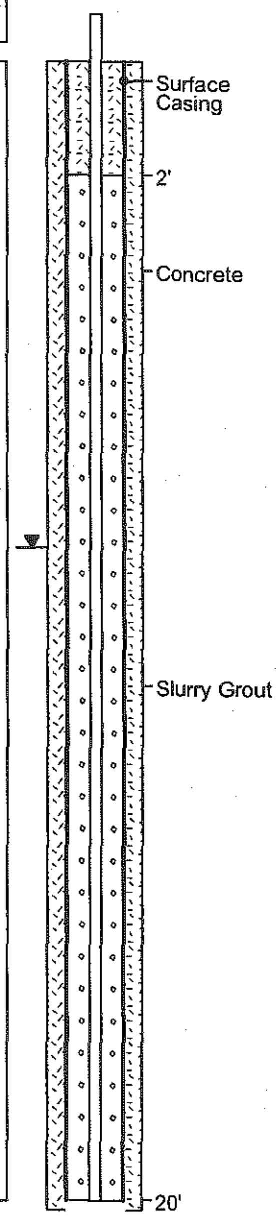
WESTON - EARTH TECH	LOG OF BORING MW-09C

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/2/03-9/17/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422219.578
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200954.080
Driller:	: B. Graham	Ground Elevation:	: 887.852'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–2	SW	SAND (SW): brown, fine to medium fill sand, some silt, dry	13, 9, 13, 9	1	Elevation is referenced to installation elevation and not to final grade elevation.
2–4			2, 2, 2, 3	2	
4–6	CL/ML	SILTY CLAY (CL/ML): gray with brown mottling, some fine to medium sand, thin sand lenses (saturated), dry, dense	NR	3	Water Level-8.57' TOC 10/06/03
6–8			2, 3, 4, 5	4	
8–10			2, 4, 10, 11	5	
9.5–12	SP	SAND (SP): gray, fine to medium sand, saturated, loose	2, 3, 7, 3	6	
12–14	CL/ML	SILTY CLAY (CL/ML): gray, some fine to coarse sand, very soft, very moist	2, 1, 1, 2	7	
14–16			1, 2, 1, 2	8	
16–18			2, 4, 7, 7	9	
18–20	CL/ML	SILTY CLAY (CL/ML): gray, some fine to coarse sand, very stiff, dry	8, 20, 13, NR	10	

Well: MW-09C
Elev.: 887.852'



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH	LOG OF BORING MW-09C

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: : Fowlerville, MI Date: : 9/2/03-9/17/03 Drilling Method: : CME 750 Subcontractor: : Stearns Drilling Driller: : B. Graham	Geologist: : C. Kotke Checked By: : P. Mcguire Northing Coordinate: : 422219.578 Easting Coordinate: : 13200954.080 Ground Elevation: : 887.852'

Well: MW-09C
Elev.: 887.852'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
20-23	CL/ML	SILTY CLAY (CL/ML): gray, trace gravel and sand, dry, dense	4, 11, 14, 18, 18, 9	11, 12	
23-24	SW	SAND (SW): gray, fine to medium sand, some silt, saturated, med dense	11, 20	12	
24-32	CL/ML	SILTY CLAY (CL/ML): gray, some fine to coarse sand, very stiff, dry, with <1/8" saturated sand seams	9, 17, 19, 22, 11, 9, 20, 27, 12, 24, 36, 45, 11, 34, 42, 41	13, 14, 15, 16	
32-36	SM	SILTY SAND (SM): gray, fine to medium sand, trace clay, moist, dense, slightly cohesive	16, 29, 39, 31, 10, 19, 33, 35	17, 18	
36-38	CL/ML	SILTY CLAY (CL/ML): gray, trace gravel and sand, dry, dense	4, 28, 31, 33	19	
38-40	SM	SILTY SAND (SM): gray, fine to medium sand, trace clay, moist, dense, slightly cohesive	17, 19, 29, 24	20	

Slurry Grout

Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

LOG OF BORING MW-09C

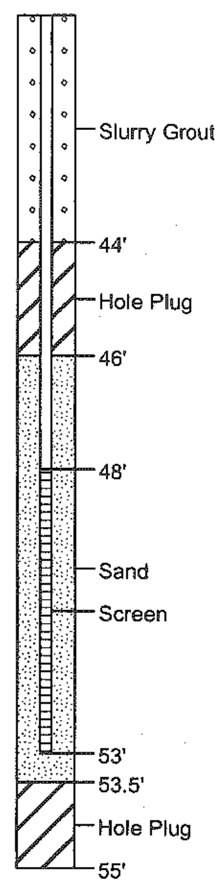
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/2/03-9/17/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422219.578
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200954.080
Driller:	: B. Graham	Ground Elevation:	: 887.852'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
40–41.5	SM	SILTY SAND (SM): gray, fine to medium sand, trace clay, moist, dense, slightly cohesive	2, 2, 9	21	
41.5–43	SL	SILTSTONE (SL): blue green, stiff, dry	13, 10, 37	22	
43–44	SS	SANDSTONE (SS): tan, soft, weathered, saturated	55, 45		
44–46.5	SL	SILTSTONE (SL): bluish gray, stiff, dry	30, 64, 50, 25, 28	23	
46.5–48.5	LS/SL	LIMESTONE/SILTSTONE (LS/SL): Gray, heavily fracture, bedded with siltstone	39, 33, 15	24	
48.5–49	LS	LIMESTONE (LS): Tan, crystalline		25	Core Barrel used to take continuous core to depth
49–53	SS/SH	SANDSTONE/SHALE (SS/SH): greenish gray, thin shale seams, in horizantally fractured sandstone			
53–54	SH	SHALE (SH): dark gray, highly fissle, shale			
54–54.5	SS	SANDSTONE (SS): greenish gray, sandstone			
54.5–55	SL	SILTSTONE (SL): light brown, siltstone, dry			

End of Boring 55 feet bgs

Well: MW-09C
Elev.: 887.852'



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

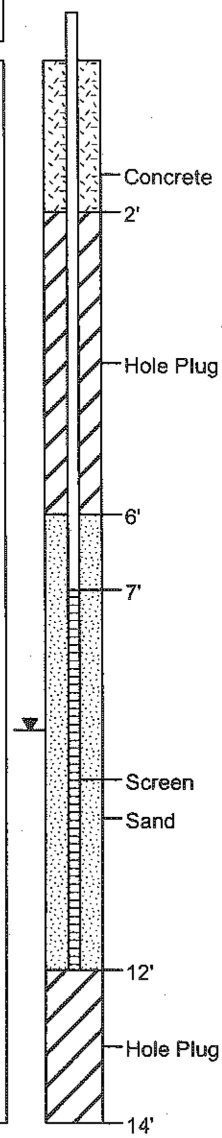
LOG OF BORING MW-10

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/24/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 850	Northing Coordinate:	: 422157.983
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200880.740
Driller:	: D. Daverman	Ground Elevation:	: 887.183'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–6	SM	Blind Drill - Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation. Water Level-8.85' TOC 10/06/03
6–9	SM	SILTY SAND (SM): brown, fill SILTY SAND (SM): brown, fill, saturated	1, 0, 0, 0, 2, 3	1, 2	Blind Drill through fill sand to 6 feet
9–12.8	SP	SAND (SP): gray, fine to medium, saturated, loose	3, 5, 2, 4, 4, 3	3	
12.8–14	CL	CLAY (CL): gray, some fine to coarse sand, very soft, very moist, cohesive		4	
14		End of Boring 14 feet bgs			

Well: MW-10
Elev.: 887.183'



Hole Diamater: 4 inch augers, 2 inch split spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

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WESTON - EARTH TECH

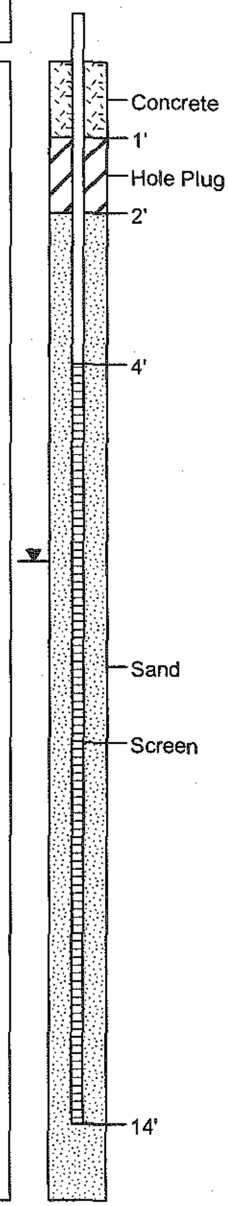
LOG OF BORING MW-11

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: B. Earl
Date:	: 9/3/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 421970.902
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200916.080
Driller:	: T. Ulrich	Ground Elevation:	: 887.917'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–8	SP		SAND (SP): tan, fine to medium fill sand, moist, loose		1 (0–5), 2 (5–10)	Elevation is referenced to installation elevation and not to final grade elevation. Water Level-9.61' TOC 10/06/03
8–11.5	SP		SAND (SP): gray, fine to medium grain sand, saturated		2, 3 (10–15)	
11.5–15	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry		3	Blind Drill to 15 feet and set well. Log is referenced to MW-11I.

Well: MW-11
Elev.: 887.917



Hole Diamater: 4 inches augers
Sampling Method: No Sampling Completed, See MW-11I
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

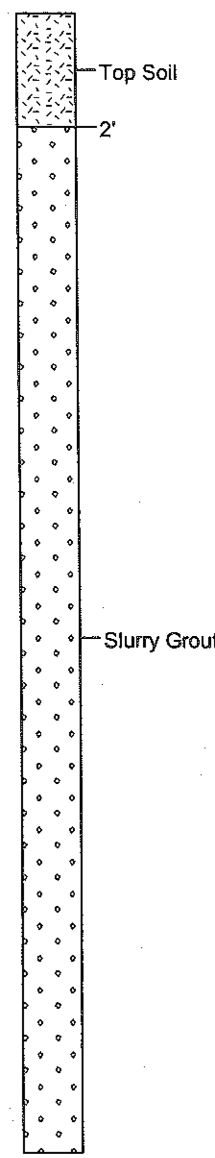
LOG OF BORING MW-11I

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 8/1/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 421970.902
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200916.080
Driller:	: R. Christenson	Ground Elevation:	: 887.917'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–8	SP		SAND (SP): tan, fine to medium fill sand, moist, loose		1 (0–5), 2 (5–10)	Elevation is referenced to installation elevation and not to final grade elevation. 4" Augers set into clay at 15' to prevent any cross contamination
8–11.5	SP		SAND (SP): gray, fine to medium sand, saturated		2, 3 (10–15)	
11.5–17.5	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff, dry thin saturated silt layers 15-17.5'		3, 4 (15–20)	
17.5–20	CL/ML		SILTY CLAY (CL/ML): gray, trace sand and sub-angular to sub-rounded gravel, very stiff, dry		4	

Well: MW-11I
Elev.: 887.917'



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Discrete Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH	LOG OF BORING MW-11I (Page 2 of 2)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: : Fowlerville, MI Date: : 8/1/03 Drilling Method: : Geoprobe Subcontractor: : Stearns Drilling Driller: : R. Christenson	Geologist: : C. Kotke Checked By: : P. Mcguire Northing Coordinate: : 421970.902 Easting Coordinate: : 13200916.080 Ground Elevation: : 887.917'	

Well: MW-11I
Elev.: 887.917'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
20–28	CL/ML		SILTY CLAY (CL/ML): gray, trace sand and sub-angular to sub-rounded gravel, very stiff, dry		5, 6	
28–31.5	SM		SILTY SAND (SM): gray, fine to coarse sand, dense, saturated to moist		6, 7	Boring was used to investigate area geology for future wells. Boring was grouted and abandond
31.5–32.5	SM		SILTY SAND (SM): gray, fine sand, dense, saturated		7	
32.5–34	SM		SILTY SAND (SM): gray, fine to coarse sand, dense, moist		7	
34–34.5	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, very stiff		7	

End of Boring @ 34.5 feet bgs

Slurry Grout
34.5'

Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Discrete Sampler
Drill Rig: Geoprobe 66DT

WESTON - EARTH TECH

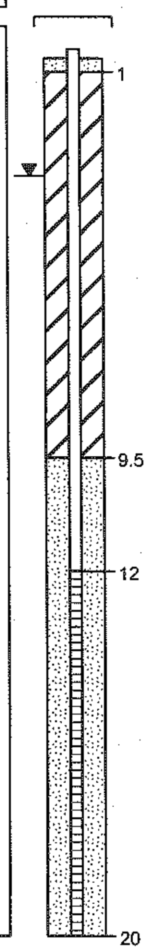
LOG OF BORING MW-12

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 7/29/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	: 422420.572
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201164.155
Driller:	: R. Christenson	Ground Elevation:	: 885.759'

Depth in Feet	Surf. Elev. 885.759	USCS	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0		AR	BLACK TOP (AR)				Elevation is referenced to installation elevation and not to final grade elevation. Water Level-2.79' TOC 10/06/03
1	885	ML	SILT (ML): black to dark brown, some fine sand, trace clay, stiff, dry	60/60	1	0.0	
2	884	CL/ML	SILTY CLAY (ML/CL): blue gray, trace sand, stiff, moist				
3	883						
4	882						
5	881	CL/ML	SILTY CLAY (ML/CL): gray, trace sand, stiff, damp	60/60	2	0.0	
6	880						
7	879						
8	878						
9	877						
10	876	ML	SILT (ML): gray, some clay, saturated	42/60	3	0.0	
11	875						
12	874	GP	GRAVEL (GP): gray, some coarse sand, sub-angular, saturated loose				
13	873						
14	872						
15	871			60/60	4	0.0	
16	870						
17	869	SP	SAND (SP): gray, medium to coarse sand, loose, saturated				
18	868						
19	867	ML/CL	SILTY CLAY (ML/CL): gray, trace sand, very stiff, dry				
20	866		End of Boring @ 20 feet bgs				
21	865						
22	864						
23	863						
24	862						
25	861						

Well: MW-12
Elev.: 885.759'



Hole Diamater: 2 inch sampler, 4 inch auger
Sampling Method: Closed Piston Sampler
Drill Rig: Geoprobe 66DT

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WESTON - EARTH TECH	LOG OF BORING MW-13 (Page 1 of 1)

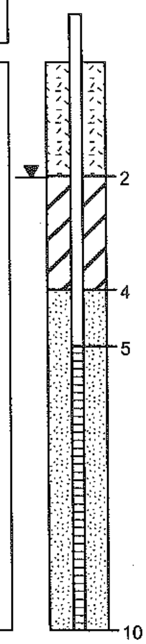
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/3/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422198.5
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200362.7
Driller:	: B. Graham	Ground Elevation:	: 880.72

Depth in Feet	Surf. Elev. 880.72	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	PID-VOCs (ppm)	REMARKS
0	880	PT		PEAT (PT): dark brown, some silt, moist				Elevation is referenced to installation elevation and not to final grade elevation. Water Level-4.03' TOC 10/06/03
2	879	SP		SAND (SP): gray, fine to medium sand, trace silt, moist				
3	878	SP		SAND (SP): gray, fine to medium sand, trace silt, saturated loose				
5	876	CL		CLAY (CL): gray, some fine to med sand, trace silt, very moist, very soft				Blind Drill to 10 feet and set well. Log is referenced to MW-13C.
6.5	874	SP		SAND (SP): gray, fine to medium sand, trace silt, saturated loose				
10	871			End of Boring 10 feet bgs				

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
Elevation scale: 880, 879, 878, 877, 876, 875, 874, 873, 872, 871, 870, 869, 868, 867, 866, 865, 864, 863, 862, 861

Well: MW-13
Elev.: 880.72



Hole Diamater: 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

LOG OF BORING MW-13C

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI
Date:	: 9/3/03-9/11/03
Drilling Method:	: CME 750
Subcontractor:	: Stearns Drilling
Driller:	: B. Graham
Geologist:	: C. Kotke/A. Strong
Checked By:	: P. Mcguire
Northing Coordinate:	: 422201.0
Easting Coordinate:	: 13200354.0
Ground Elevation:	: 880.73

USCS	DESCRIPTION
PT	PEAT (PT): dark brown, some silt, moist
SP	SAND (SP): gray, fine to medium sand, trace silt, moist
SP	SAND (SP): gray, fine to medium sand, trace silt, saturated, loose
CL	CLAY (CL): gray, some fine to med sand, trace silt, very moist, very soft
SP	SAND (SP): gray, fine to medium sand, trace silt, saturated, loose
CL/ML	SILTY CLAY (CL/ML): gray, some sand, dry, dense
SP	SAND (SP): gray, fine to medium sand, trace silt, saturated, loose
ML/CL	CLAYEY SILT (ML/CL): gray, dry, dense

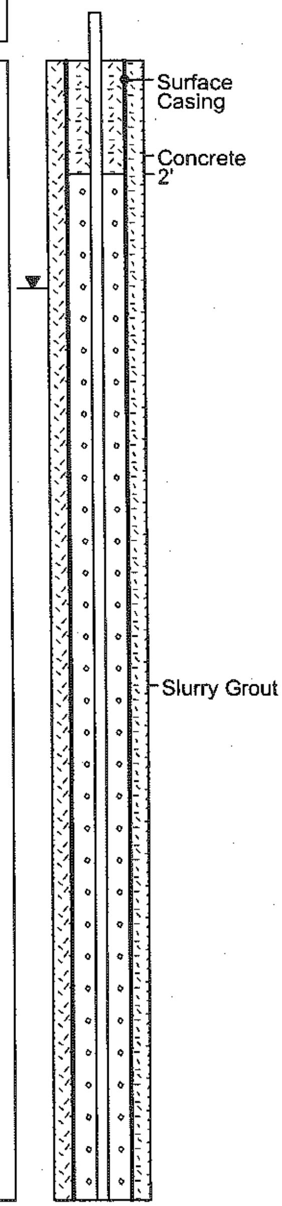
Samples	Blow Count
1	1, 1, 1, 2
2	3, 4, 4, 5
3	3, 2, 1, 1
4	2, 2, 2, 3
5	0, 3, 3, 5
6	0, 0, 3, 4
7	0, 0, 5, 8
8	0, 3, 4, 6
9	4, 5, 7, 8
10	2, 10, 14, 12

REMARKS:

Elevation is referenced to installation elevation and not to final grade elevation.

Water Level-4.01' TOC 10/06/03

Well: MW-13C
Elev.: 880.73



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

WESTON - EARTH TECH

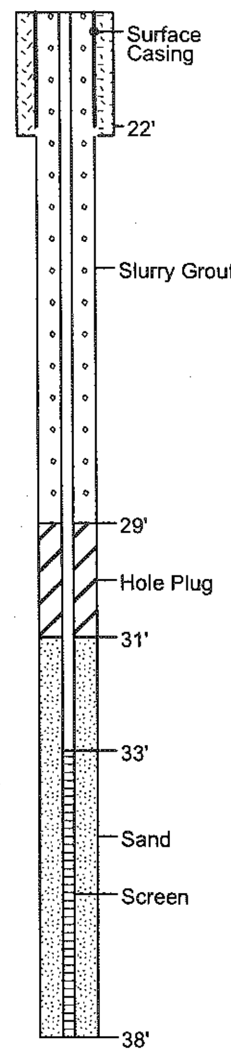
LOG OF BORING MW-13C

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke/A. Strong
Date:	: 9/3/03-9/11/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422201.0
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200354.0
Driller:	: B. Graham	Ground Elevation:	: 880.73

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
20–26	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, dry, dense	4, 12, 12, 8	11	
			12, 17, 26, 17	12	
			40, 41, 50, NR	13	
26–28	SS	SANDSTONE (SS): gray	43, 33, 40, 39	14	
28–31.5	SL	SILTSTONE (SL): gray, some fine sand	11, 8, 6, 13	15	
			2, 10, 62, 18	16	
31.5–38	SS/SL	SANDSTONE/SILTSTONE (SS/SL): Interbedded layers of sandstone and siltstone	NR	17	Due to refusal this is assumed from previous split spoons
			NR	18	
			NR	19	Blind Drill to 38 feet and set well. Spoons did not recover any material
38		End of Boring 38 feet bgs			

Well: MW-13C
Elev.: 880.73



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

LOG OF BORING MW-14

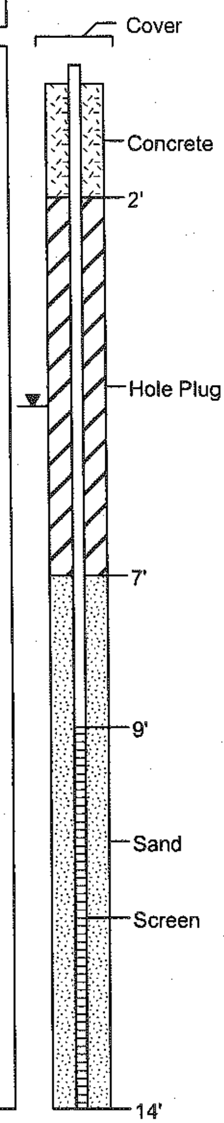
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/15/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 421838.414
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200796.440
Driller:	: B. Graham	Ground Elevation:	: 883.723'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–1.5	ML	SILT (ML): dark brown, some fine sand, trace clay, moist, med dense, (topsoil)	5, 4, 4	1	Elevation is referenced to installation elevation and not to final grade elevation.
1.5–3	CL/ML	SILTY CLAY (CL/ML): gray, trace gravel and sand, dry, dense	5, 3, 4	2	Water Level-4.26' TOC 10/06/03
3–4	CL/ML	SILTY CLAY (CL/ML): tan, trace gravel and trace sand, dry, dense	5, 5		
4–7	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, moist, dense	2, 3, 3, 3, 4, 4	3, 4	Blind Drill to 14 feet and set well. Log is referenced to MW-14C.
7–7.5	SW	SAND (SW): gray, some silt, saturated, loose	6		
7.5–9	SP	SAND (SP): gray, fine to medium sand, saturated, loose	7, 13, 12	5	
9–12	GP	GRAVEL/COBBLE (GP): gray, cobbles (>4"), semi-rounded to sub-angular, saturated, loose	14, 45, 2, 45, NR, NR	6	
12–13	SP	SAND (SP): gray, fine to medium, sand, saturated, loose	7, 11	7	
13–14	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, dry, dense	20, 24		

End of Boring 14 feet bgs

Well: MW-14
Elev.: 883.723'



Hole Diamater: 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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LOG OF BORING MW-14C

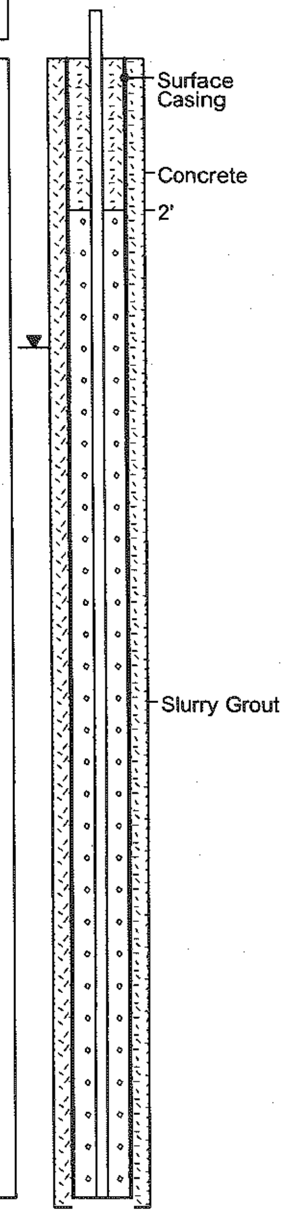
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/12/03-9/15/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	:
Subcontractor:	: Stearns Drilling	Easting Coordinate:	:
Driller:	: B. Graham	Ground Elevation:	: 883.33

Depth in Feet	USCS	DESCRIPTION	REMARKS
0–1.5	ML	SILT (ML): dark brown, some fine sand, trace clay, moist, med dense, (topsoil)	Elevation is referenced to installation elevation and not to final grade elevation.
1.5–3	ML/CL	SILTY CLAY (ML/CL): gray, trace gravel and sand, dry, dense	
3–4	ML/CL	SILTY CLAY (ML/CL): tan, trace gravel and sand, dry, dense	Water Level-3.82' TOC 10/06/03
4–7	ML/CL	SILTY CLAY (ML/CL): gray, trace sand, moist, dense	
7–7.5	SW	SAND (SW): gray, some silt, saturated, loose	
7.5–9	SP	SAND (SP): gray, fine to medium sand, saturated, loose	
9–12	GP	GRAVEL/COBBLE (GP): gray, cobbles (>4"), semi-rounded to sub-angular, saturated, loose	
12–13	SP	SAND (SP): gray, fine to medium sand, saturated, loose	
13–15	ML/CL	SILTY CLAY (ML/CL): gray, trace sand, dry, dense	

Samples	Blow Count
1	5, 4, 4, 5
2	3, 4, 5, 5
3	2, 3, 3, 3
4	4, 4, 6, 7
5	13, 12, 14, 45
6	2, 45, NR, NR
7	7, 11, 20, 24
8	4, 18

Well: MW-14C
Elev.: 883.33



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

LOG OF BORING MW-14C

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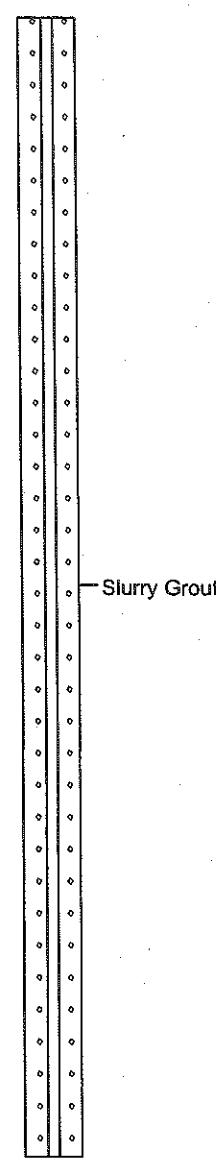
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/12/03-9/15/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	:
Subcontractor:	: Stearns Drilling	Easting Coordinate:	:
Driller:	: B. Graham	Ground Elevation:	: 883.33

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
15–16	ML/CL	SILTY CLAY (ML/CL): gray, trace sand, dry, dense	22, 28	8	
16–18	ML/CL		9, 26, 27, 28	9	
18–20	ML/CL		52, 59, 75, 79	10	
20–22	ML/CL		60, 49, 54, 56	11	
22–24	ML/CL	SILTY CLAY (ML/CL): gray, trace sand, dry, dense	82, 46, 67, 80	12	
24–26	ML/CL		44, 34, 46, 54	13	1/8" sand seams runing horizantally through silty clay layer 25'-27'
26–28	ML/CL		17, 44, 38, 29	14	
28–29.3	SL	SILTSTONE (SL): blue green, dry, stiff	5, 10	15	
29.3–29.8	SC	CLAYEY SAND(SC):gray, loose	32	15	
29.8–30	SL		31	15	

Well: MW-14C
Elev.: 883.33



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

LOG OF BORING MW-14C

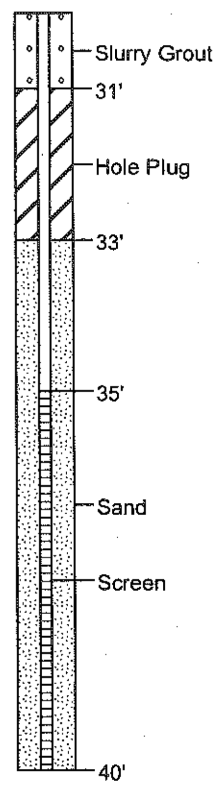
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/12/03-9/15/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	:
Subcontractor:	: Stearns Drilling	Easting Coordinate:	:
Driller:	: B. Graham	Ground Elevation:	: 883.33

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
30–32.2	SL		SILTSTONE (SL): blue green, dry, stiff	48 155 8 21 100	16 17	
32.2–34	SS		SANDSTONE (SS): gray,some silt, dry to moist			Start Core Barrel at 33 feet
34–35	SL		SILTSTONE (SL): blue green, some fine sand, dry, stiff			
35–39	SS		SANDSTONE (SS): gray, fine to medium grain sandstone, horizantal fractures, vertical fractures (35.2'-35.5'), iron staining on edges of fractures			
39–40	SL		SILTSTONE (SL): blue gray, some fine sand, dry, stiff			

End of Boring 40 feet bgs

Well: MW-14C
Elev.: 883.33



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

LOG OF BORING MW-14C

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WESTON - EARTH TECH

LOG OF BORING MW-15

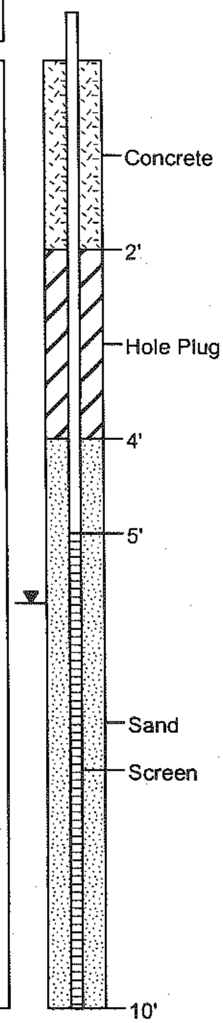
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/11/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422439.2
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200185.0
Driller:	: B. Graham	Ground Elevation:	: 881.63

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–2.5	ML	SANDY SILT (ML): brown to gray, fine sand, trace clay, damp	2, 4, 4, 6	1	Elevation is referenced to installation elevation and not to final grade elevation.
2.5–3.5	CL	CLAY (CL): gray, moist	2, 4, 3, 3	2	
3.5–6.5	SP	SAND (SP): gray, medium to coarse, sand, trace silt, saturated	1, 2, 3, 3	3	Water Level-5.74' TOC 10/06/03
6.5–8.5	SP	SAND (SP): brown, medium to coarse, sand, trace silt, saturated	0, 0, 7, 8	4	Blind Drill to 10 feet and set well. Log is referenced to MW-15C.
8.5–10	SP	SAND (SP): gray, medium to coarse, sand, trace silt, saturated	1, 3, 7, 9	5	

End of Boring 10 feet bgs

Well: MW-15
Elev.: 881.63



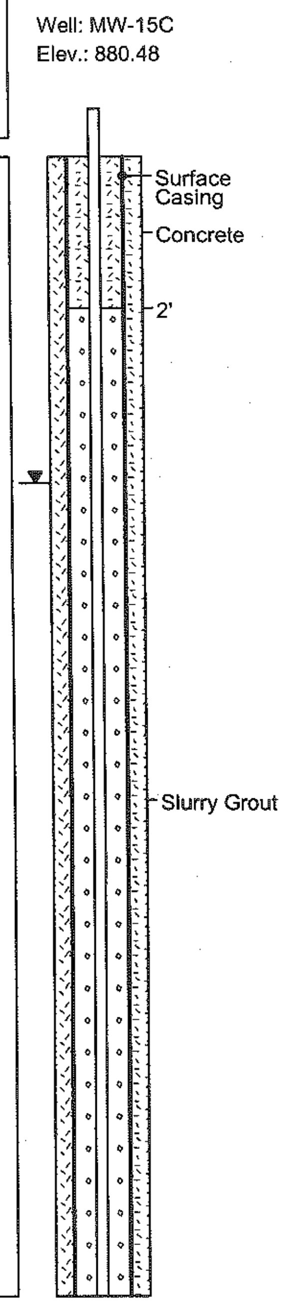
Hole Diamater: 4 inch augers
Sampling Method:
Drill Rig: CME 750

WESTON - EARTH TECH	LOG OF BORING MW-15C (Page 1 of 2)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/4/03-9/10/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422435.0
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200181.2
Driller:	: B. Graham	Ground Elevation:	: 880.48

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–2.5	SM	SANDY SILT (ML): brown to gray, fine sand, trace clay, damp	2, 4, 4, 6	1	Elevation is referenced to installation elevation and not to final grade elevation.
2.5–3.5	CL	CLAY (CL): gray, moist	2, 4, 3, 3	2	
3.5–6.5	SP	SAND (SP): gray, medium to coarse, sand, trace silt, saturated	1, 2, 3, 3	3	Water Level-4.31' TOC 10/06/03
6.5–8.5	SP	SAND (SP): brown, medium to coarse, sand, trace silt, saturated	0, 0, 7, 8	4	
8.5–11.5	SP	SAND (SP): gray, medium to coarse, sand, trace silt, saturated	1, 3, 7, 9	5	
			1, 2, 4, 6	6	
11.5–12.5	SC	CLAYEY SAND (SC): gray, fine to medium sand, trace silt, very moist, very soft			
12.5–15	SP	SAND (SP): gray, fine to medium sand, trace silt, saturated loose	3, 2, 8, 10	7	
			3, 27	8	



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

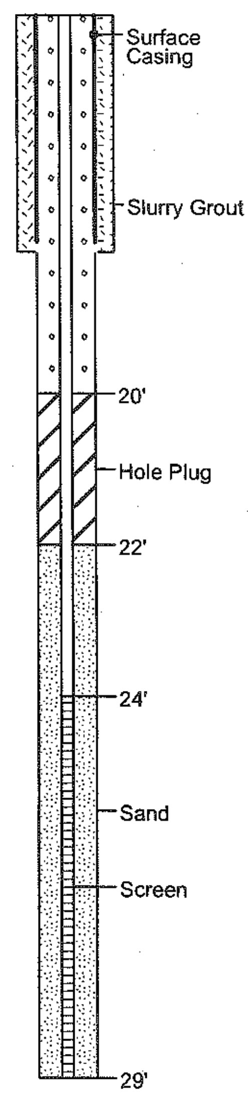
WESTON - EARTH TECH	LOG OF BORING MW-15C
	(Page 2 of 2)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/4/03-9/10/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422435.0
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200181.2
Driller:	: B. Graham	Ground Elevation:	: 880.48

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
15–16	SP			29, 20	8	
16–18	CL/ML		SILTY CLAY (CL/ML): gray, some gravel trace sand, dry, dense	5, 21, 34, 45	9	
18–20	SM		SILTY SAND (SM): gray, fine to medium sand, trace clay, saturated	11, 22, 24, 24	10	
20–21.5	CL/ML		SILTY CLAY (CL/ML): gray, trace gravel, trace sand, dry, dense	4, 13, 21	11	
21.5–24	SS		SANDSTONE (SS): gray, horizantal fractures, saturated	107, 15, 109, 31, 75	12, 13	
24–27.5	SL/SS		SANDSTONE/SILTSTONE (SS/SL): Interbedded layers of sandstone (< 3 in. thick) in siltstone	52, 48, 7, 26, 59, 60, 16	14	
27.5–29	SS		SANDSTONE (SS): Gray, sandstone	100, NR	15	
29–30			End of Boring 29 feet bgs			

Well: MW-15C
Elev.: 880.48



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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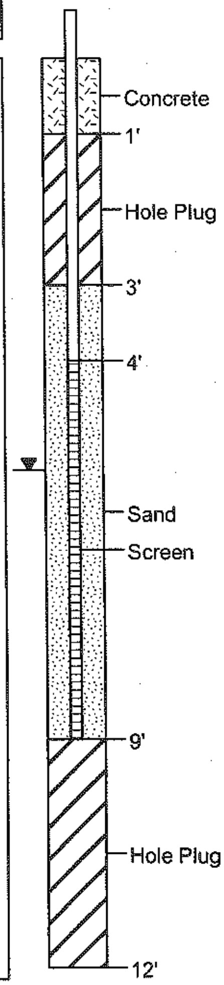
WESTON - EARTH TECH	LOG OF BORING MW-17
	(Page 1 of 1)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/23/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 850	Northing Coordinate:	: 422078.918
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200809.810
Driller:	: D. Daverman	Ground Elevation:	: 885.991'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–4	SM		Blind Drill - Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation. Water Level-7.45' TOC 10/06/03
4–6	SM		Fill Sand, saturated, kerosene odor	3, 4, 5, 7	1	Blind Drill through fill sand to 4 feet
6–9	SP		SAND (SP): gray to dark gray, fine to medium sand, saturated, loose, kerosene odor	1, 1, 2, 3, 2, 3	2, 3	
9–11	SP		SAND (SP): black, medium to coarse sand, saturated, loose, no odor	3, 4, 3, 4	3, 4	
11–11.75	GW		GRAVEL (GW): gray, medium to coarse sand, saturated, loose	7, 10	4	
12	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, non-plastic			
			End of Boring 12 feet bgs			

Well: MW-17
Elev.: 885.991



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

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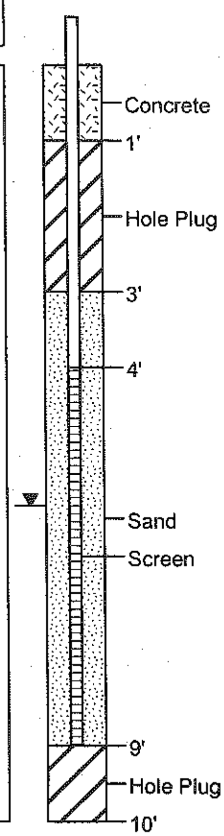
WESTON - EARTH TECH	LOG OF BORING MW-18
	(Page 1 of 1)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: : Fowlerville, MI Date: : 9/23/03 Drilling Method: : CME 850 Subcontractor: : Stearns Drilling Driller: : D. Daverman	Geologist: : C. Kotke Checked By: : P. Mcguire Northing Coordinate: : 422198.357 Easting Coordinate: : 13200819.870 Ground Elevation: : 883.946'	

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–2	SM		Blind Drill - Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation.
2–4	SM			3, 5, 5, 7	1	Blind Drill through fill sand to 2 feet
4–6	SM		Fill Sand	2, 3, 3, 4	2	Water Level-8.33' TOC 10/06/03
6–8	SW		SAND (SW): gray, fine to coarsesand, some silt, saturated, loose	4, 5, 7, 7	3	Due to recent rain event soil is saturated from the surface
8–8.5	SW			3	4	
8.5–9	CL		CLAY (CL): gray, some sand, trace silt, moist, cohesive	3	4	
9–10	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, dense, non-plastic	6, 8	4	
10			End of Boring 10 feet bgs			

Well: MW-18
Elev.: 883.946'



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

WESTON - EARTH TECH

LOG OF BORING MW-19

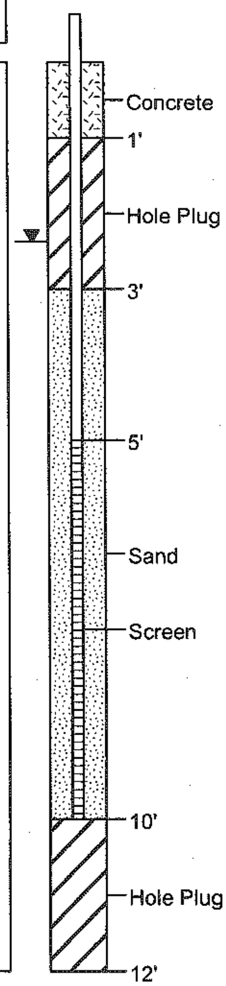
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/23/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 850	Northing Coordinate:	: 422366.648
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200833.550
Driller:	: D. Daverman	Ground Elevation:	: 883.903'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–6	SM		Blind Drill - Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation. Water Level-4.87' TOC 10/06/03 Blind Drill through fill sand to 6 feet
6–7.5	CL		CLAY (CL): gray, some sand, trace silt, plastic, moist, cohesive	3 5 8	1	
7.5–9	SP		SAND (SP): gray, fine to medium, saturated, loose	10 3 5	2	
9–9.5	SP		SAND (SP): gray, medium to coarse, saturated, loose	6		
9.5–12	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, non-plastic	8 4 6 7 7	3	

End of Boring 12 feet bgs

Well: MW-19
Elev.: 883.903



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

WESTON - EARTH TECH	LOG OF BORING MW-20
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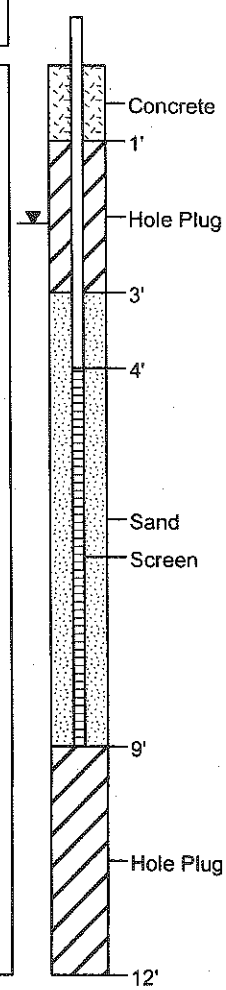
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/24/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 850	Northing Coordinate:	: 422522.279
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200806.740
Driller:	: D. Daverman	Ground Elevation:	: 882.460'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–4.5	SM		Blind Drill - Fill Sand Fill Sand (at 4 ft)	3 (4–4.5)	1 (4–6)	Elevation is referenced to installation elevation and not to final grade elevation. Water Level-4.59' TOC 10/06/03 Blind Drill through fill sand to 4 feet
4.5–5	SW		SAND (SW): gray, fine to coarse, some silt, saturated, loose	5	1	
5–9.5	ML		SILT (ML): brown, some fine sand, saturated, non-plastic	7, 9, 4, 7, 8, 9, 5, 7, 4	1, 2 (6–8), 3 (8–10)	
9.5–10	CL		CLAY (CL): pink, some sand, trace silt, moist, cohesive	4	3	
10–12	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, non-plastic	4, 5, 5, 7	4 (10–12)	
12			End of Boring 12 feet bgs			

Well: MW-20
Elev.: 882.460



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

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WESTON - EARTH TECH

LOG OF BORING MW-21

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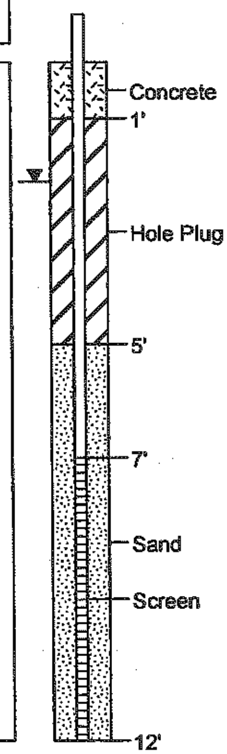
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/8/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 421690.5
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200533.1
Driller:	: B. Graham	Ground Elevation:	: 881.93'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–5.5	PT	PEAT (PT): black, moist	1, 2, 1, 1	1	
			2, 1, 1, 1	2	Water Level-5.11' TOC 12/18/03
			1, 1, 1, 2	3	
5.5–7.7	SC	CLAYEY SAND (SC): gray, trace organics (CaCO3), plastic, soft, cohesive, swamp odor	1, 1, 1, 4	4	
7.7–12	SP	SAND (SP): gray, medium to coarse, saturated, loose	6, 4, 6, 8	5	
			0, 1, 3, 4	6	

End of Boring 12 feet bgs

Well: MW-21
Elev.: 884.93



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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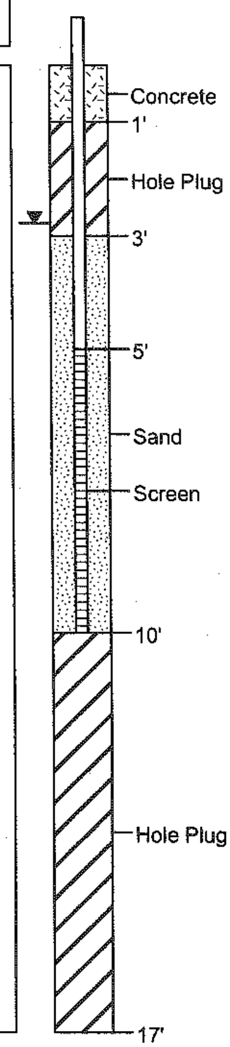
WESTON - EARTH TECH	LOG OF BORING MW-22 (Page 1 of 1)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/18/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422341.478
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200499.090
Driller:	: B. Graham	Ground Elevation:	: 881.206

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–5	SM	Blind Drill - Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation. Water Level-' TOC 10/06/03
5–6.5	SP	SAND (SP): gray, medium to coarse, saturated, loose	0, 0, 2	1	Blind Drill through fill sand to 5 feet
6.5–12.5	SW	SAND (SW): gray, medium to coarse, trace silt, saturated	3, 1, 2, 3, 2, 1, 2, 1, 2, 1, 1, 1	2, 3, 4	
12.5–13.5	CL/ML	SILTY CLAY (CL/ML): dark gray, some sand, moist, soft, cohesive	2, 3		Geotech sample taken in 3"x6" brass liner from 13'-15'
13.5–14.5	SW	SAND (SW): gray, medium to coarse, trace silt, saturated	3, 5	5	
14.5–15	CL/ML	SILTY CLAY (CL/ML): gray, some sand, soft, moist	5		
15–16.5	SW	SAND (SW): gray, medium to coarse, trace silt, saturated	3, 4, 4	6	Geotech sample taken in 3"x6" brass liner from 15'-17'
16.5–17	CL/ML	SILTY CLAY (CL/ML): gray, some sand, soft, moist	6		
17		End of Boring 17 feet bgs			

Well: MW-22
Elev.: 881.206



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

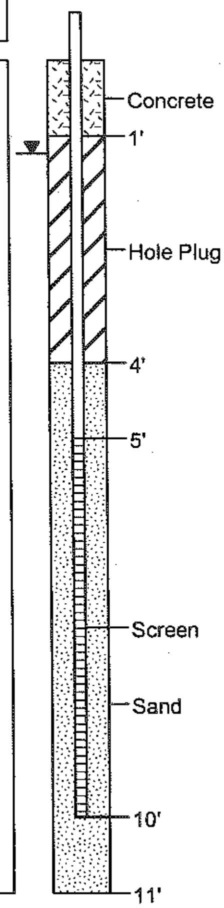
LOG OF BORING MW-23

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/24/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 850	Northing Coordinate:	: 422405.476
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200642.180
Driller:	: D. Daverman	Ground Elevation:	: 880.259'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0–2.5	SM		Blind Drill - Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation.
2.5–4	SM		SILTY SAND (SM): gray, trace clay, saturated, slight cohesion	4, 6, 8, 9	1	Blind Drill through fill sand to 2 feet Water Level-3.73' TOC 10/06/03
4–6				NR	2	> 4" cobble obstructing augers and spoon. Attempting to drill through to 9'
6–9	SM		SILTY SAND (SM): gray, trace clay, saturated, slight cohesion			
9–11			SILTY SAND (SM): gray, trace clay, saturated, slight cohesion	3, 5, 5, 4	3	
11			End of Boring 11 feet bgs			

Well: MW-23
Elev.: 880.259



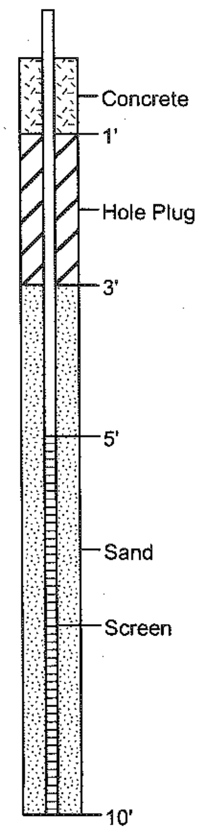
Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

WESTON - EARTH TECH	LOG OF BORING MW-24 (Page 1 of 1)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: : Fowlerville, MI Date: : 10/27/03 Drilling Method: : CME 850 Subcontractor: : Stearns Drilling Driller: : R. Christenson	Geologist: : C. Kotke Checked By: : P. Mcguire Northing Coordinate: : 422305.1 Easting Coordinate: : 13200645.6 Ground Elevation: : 881.10'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–3.5	SM	Fill Sand		1	Reference elevation is based on MW-A2
3.5–4.5	SW	SAND (SW): gray, fine to coarse (angular) sand, trace silt, medium dense, moist			Water Level- 3.64 TOC 11-03-03
4.5–9.6	SW	SAND (SW): gray, fine to coarse (angular) sand, trace silt, medium dense, saturated		2	
9.6–10	CL/ML	SILTY CLAY (CL/ML): gray, trace coarse (angular) sand			
10		End of Boring 10 feet bgs			

Well: MW-24
Elev.: 881.10



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

WESTON - EARTH TECH

LOG OF BORING MW-25

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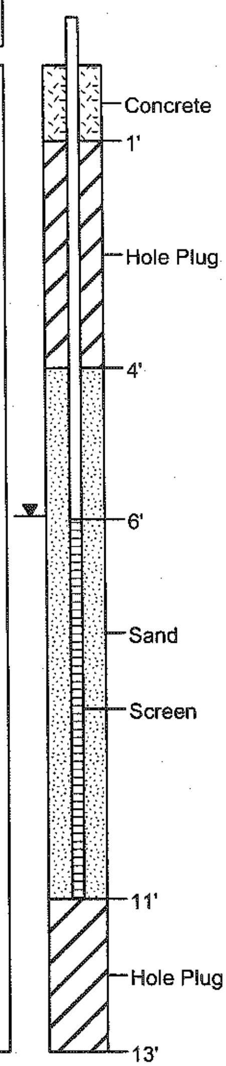
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/18/03	Checked By:	: M. Pozniak
Drilling Method:	: CME 750	Northing Coordinate:	: 422071.826
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200958.050
Driller:	: B. Graham	Ground Elevation:	: 887.510'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–5	SM	Blind Drill - Fill Sand			Elevation is referenced to installation elevation and not to final grade elevation. Water Level-7.96' TOC 10/06/03
5–8	ML	SILT (ML): brown, some clay, trace sand, non-plastic, very moist, cohesive	2 2 2 2 3 5	1 2	Blind Drill through fill sand to 5 feet
8–10.5	SP	SAND (SP): gray, medium to coarse, saturated, loose	7 12 2 4 10	2 3	
10.5–13	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, dry, non-plastic	8 6 4 4 4	3 4	

End of Boring 13 feet bgs

Well: MW-25
Elev.: 887.510



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

WESTON - EARTH TECH

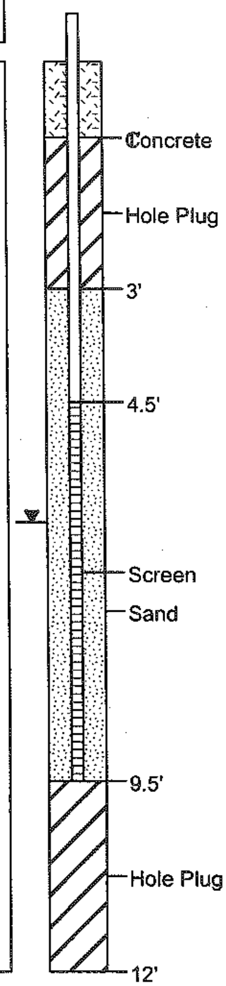
LOG OF BORING MW-26

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI
Date:	: 9/24/03
Drilling Method:	: CME 850
Subcontractor:	: Stearns Drilling
Driller:	: D. Daverman
Geologist:	: C. Kotke
Checked By:	: P. Mcguire
Northing Coordinate:	: 422183.572
Easting Coordinate:	: 13200740.370
Ground Elevation:	: 884.294'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–6.5	SM	Blind Drill - Fill Sand Fill Sand	3		Elevation is referenced to installation elevation and not to final grade elevation. Water Level-8.59' TOC 10/06/03 Blind Drill through fill sand to 6 feet
6.5–7	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, plastic, cohesive	6	1	
7–9	SP	SAND (SP): gray, medium to coarse, saturated, loose	4 4 3 6	2	
9–10.5	GW	GRAVEL (GW): gray, some medium to coarse sand, trace clay, saturated, loose, non-cohesive	10 2 3		
10.5–11.25	SW	SAND (SW): gray, fine to coarse, some silt, saturated, loose	4	3	
11.25–11.7	CL	CLAY (CL): gray, some sand, very soft, very moist	6		
11.7–12	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, dry, non-plastic	16		
12		End of Boring 12 feet bgs			

Well: MW-26
Elev.: 884.294



Hole Diamater: 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 850

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WESTON - EARTH TECH

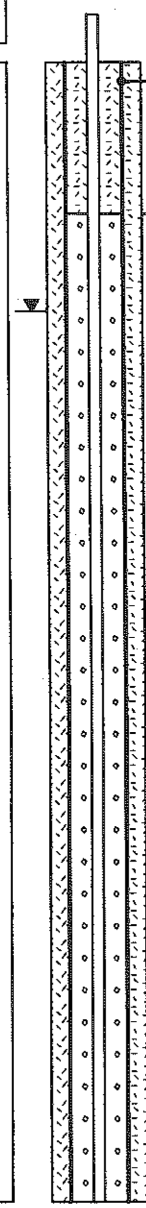
LOG OF BORING MW-OS1C

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/3/03-9/8/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422244.4
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200459.2
Driller:	: B. Graham	Ground Elevation:	: 880.25

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0	PT		PEAT (PT): dark brown, some silt, peat, moist	1, 2, 1	1	
1.5	SW		SAND (SW): gray, fine to medium, some silt, saturated, loose	3, 2	2	
2.5	SP		SAND (SP): gray, fine to medium, trace silt, saturated, loose	2, 2, 2, 2, 3	3	Water Level-3.29' TOC 10/06/03
5	SW		SAND (SW): gray, fine to medium sand, trace silt and clay, saturated, cohesive	3, 4, 2	4	
6.5	SW		SAND (SW): gray, medium to coarse sand, trace silt and clay, saturated, cohesive	2, 4, 8		
8	SP		SAND (SP): gray, medium to coarse sand, saturated, loose	0, 2, 3, 8, 2, 5, 8, 13, 5	5, 6, 7	
12.5	SC		CLAYEY SAND (SC): gray, very soft, very moist	3, 2, 3, 3	8	
14.5	SW		SAND (SW): gray, trace silt and clay	5		
15						

Well: MW-OS1C
Elev.: 880.25



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

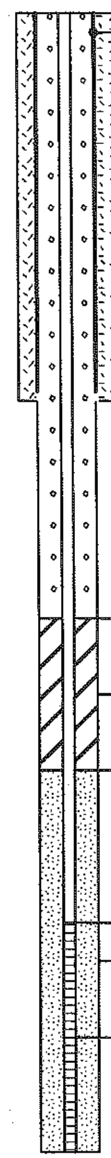
LOG OF BORING MW-OS1C

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/3/03-9/8/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422244.4
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200459.2
Driller:	: B. Graham	Ground Elevation:	: 880.25

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
15–17	SW		SAND (SW): gray, trace silt and clay, saturated, slightly cohesive	7, 5	8	
				5, 12	9	
17–20	CL/ML		SILTY CLAY (CL/ML): gray, trace sand, dry, dense	23, 19	9	
				5, 8, 13, 19	10	
20–21.5	SM		SILTY SAND (SM): gray, trace clay, saturated, medium dense	6, 13, 22	11	
21.5–22	SS		SANDSTONE (SS): tan	20	11	
22–28	SL		SILTSTONE (SL): blue green, dry, very stiff	6, 11, 19, 35	12	
				5, 19, 20, 26	13	
				4, 14, 29, 20	14	
28–30	SH/SS		SILTSTONE/SANDSTONE (SL/SS): grayish blue, siltstone with thin beds of fractured sandstone	9, 17, 24, 71	15	

Well: MW-OS1C
Elev.: 880.25



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

WESTON - EARTH TECH	LOG OF BORING MW-OS1C
	(Page 3 of 3)

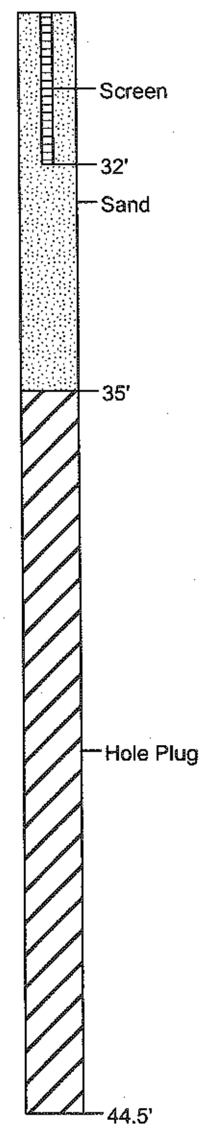
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/3/03-9/8/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422244.4
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200459.2
Driller:	: B. Graham	Ground Elevation:	: 880.25

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
30–38	SH/SS	SILTSTONE/SANDSTONE (SL/SS): grayish blue, siltstone with thin beds of fractured sandstone	32, 81, 45, 71	16	
			5, 12, 14, 24	17	
		SILTSTONE/SANDSTONE (SL/SS): grayish blue, siltstone with thin beds of fractured sandstone	35, 39, 28, 31	18	
			6, 9, 29, 25	19	
38–40	SL	SILTSTONE (SL): blue green, dry, very stiff	10, 20, 23, 18	20	
40–42.5	SH	SHALE (SH): dark gray, fissle, dry	5, 13, 16, 20	21	
42.5–43.5	SL	SILTSTONE (SL): blue green, dry, very stiff	13, 75	22	
43.5–44.5	SH	SHALE (SH): greenish gray, fissle, dry	10, 47, 75	23	

End of Boring 44.5 feet bgs

Well: MW-OS1C
Elev.: 880.25



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

LOG OF BORING MW-OS3C

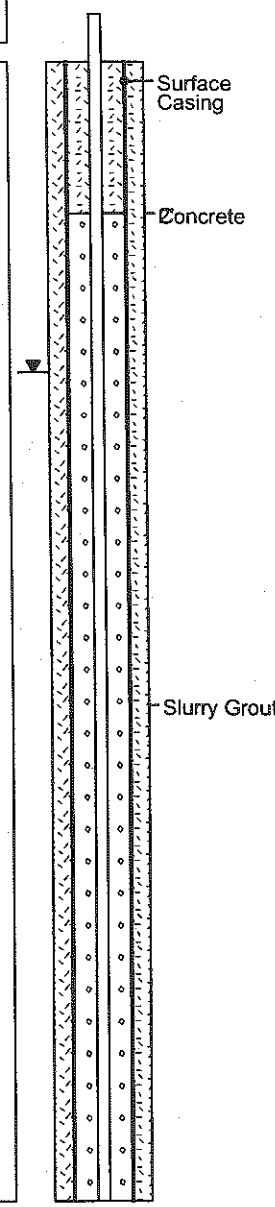
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/4/03-9/9/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422021.8
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200645.8
Driller:	: B. Graham	Ground Elevation:	: 881.48

Depth in Feet	USCS	DESCRIPTION	REMARKS
0–2.5	SM	SILTY SAND (SM): brown, fine to medium sand, trace clay, damp, loose, (topsoil)	
2.5–5.5	SM	SILTY SAND (SM): gray, fine to medium sand, trace clay, damp, loose	Water Level-4.10' TOC 10/06/03
5.5–6.75	SP	SAND (SP): gray, fine to medium sand, trace silt, saturated, loose	
6.75–11.5	SC	CLAYEY SAND (SC): gray, some silt, cohessive, very soft, very moist	
11.5–15	SP	SAND (SP): gray, coarse, trace gravel, saturated, loose	

Samples	Blow Count
1	2, 2, 3, 3
2	4, 1, 1, 1
3	0, 0, 1, 1
4	1, 1, 2, 2
5	1, 1, 1, 1
6	1, 4, 3, 6
7	3, 6, 6, 6
8	2, 13

Well: MW-OS3C
Elev.:



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

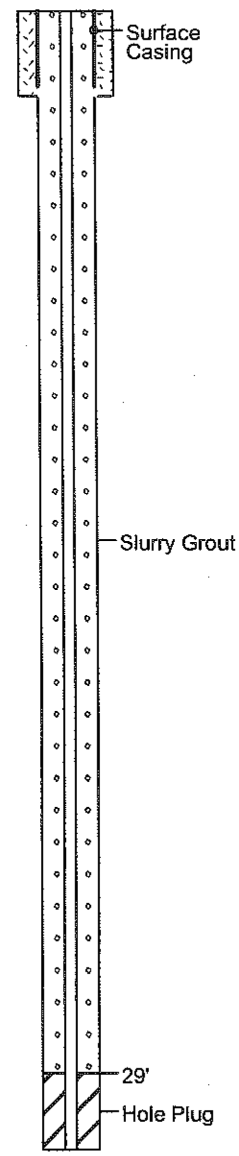
LOG OF BORING MW-OS3C

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 9/4/03-9/9/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422021.8
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200645.8
Driller:	: B. Graham	Ground Elevation:	: 881.48

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
15–20	CL/ML	SILTY CLAY (CL/ML): gray, trace sand, dry, dense	33, 49	8	
			75	9	Very hard, no return in spoon taken 16'-17'
			13, 64, 100, 76	10	
			35, 70	11	
20–28	CL/ML	SILTY CLAY (CL/ML): gray, trace sand and sub angular gravel, very dry, very hard	108, NR	11	
			37, 60, 110, 105	12	
			126	13	Very hard, no spoon taken 23.5'-25'
			24, 60, 73, 62	14	
			71, 99	15	
28–29.5	SL	SILTSTONE (SL): blue green, dry, very stiff	9, 13, 29	16	
29.5–30	SM	SILTY SAND(SM): gray, saturated, loose	21	16	

Well: MW-OS3C
Elev.:



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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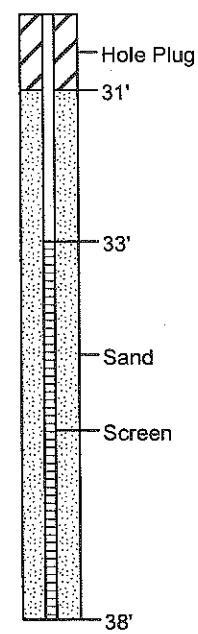
WESTON - EARTH TECH	LOG OF BORING MW-OS3C
	(Page 3 of 3)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01				
	Location:	: Fowlerville, MI	Geologist:	: C. Kotke
	Date:	: 9/4/03-9/9/03	Checked By:	: P. Mcguire
	Drilling Method:	: CME 750	Northing Coordinate:	: 422021.8
	Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13200645.8
	Driller:	: B. Graham	Ground Elevation:	: 881.48

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
30	SM		28		
30.5–33	SL/SS	SILTSTONE/SANDSTONE (SL/SS): grayish blue, siltstone with thin beds of fractured sandstone	29 94 92 8 31	17 18	
33–36.5	SS	SANDSTONE (SS): tan (yellow and orange staining along fractured zones), fine to medium grain, quartz, sandstone	84 94 8 55 83 15	19	
36.5–38	SL/LS	SILTSTONE/LIMESTONE (SL/LS): blue green, siltstone, with some crystaline limstone seams <3"	25 31 45	20	
38		End of Boring 38 feet bgs			

Well: MW-OS3C
Elev.:



Hole Diamater: 12 inch, 4 inch augers
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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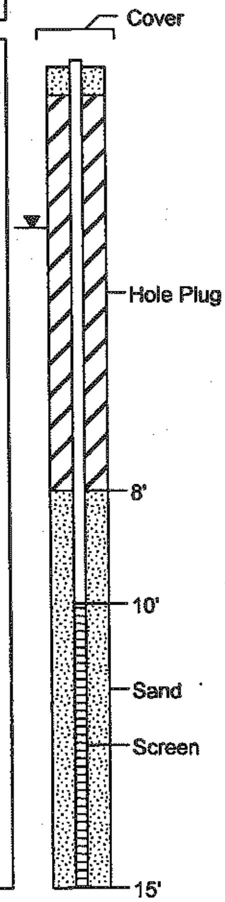
WESTON - EARTH TECH	LOG OF BORING MW-27
	(Page 1 of 1)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/9/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422142.5
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201102.9
Driller:	: B. Graham	Ground Elevation:	: 885.30'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0	SW		SAND (SW): black, fine to medium, some silt, moist, topsoil	0		
1–2	SC		CLAYEY SAND (SC): tan, medium, some clay, moist, loose, slight cohesion	1, 2, 3	1	
3–4	SP		SAND (SP): tan, fine to medium, loose, moist	2, 2, 3, 3	2	Water Level-2.98' TOC 12/18/03
4–5	SP		SAND (SP): tan, fine to medium, loose, saturated	2, 2	3	
5	GW		GRAVEL (GW): tan, some sand, semi-angular, saturated	4		
5.5–8	CL/ML		SITLY CLAY (CL/ML): gray, trace coarse, angular, sand, plastic, medium soft	6, 2, 3, 4, 7	4	Blind Drill - Log is from MW-27C
8–11.5	SP		SAND (SP): gray, medium to coarse, sand, trace semi-rounded gravel, loose, saturated	2, 3, 3, 13, 8, 8, 8	5, 6	
11.5–12.5	GC		CLAYEY GRAVEL (GC): gray, angular, trace coarse sand, saturated, slight cohesion	6, 10		
12.5–14	GP		GRAVEL (GP): gray, angular, saturated, loose	8, 8, 9	7	
14–15	SP		SAND (SP): gray, coarse, angular, saturated, loose	2, 3	8	
15			End of Boring 15 feet bgs			

Well: MW-27
Elev.: 884.92

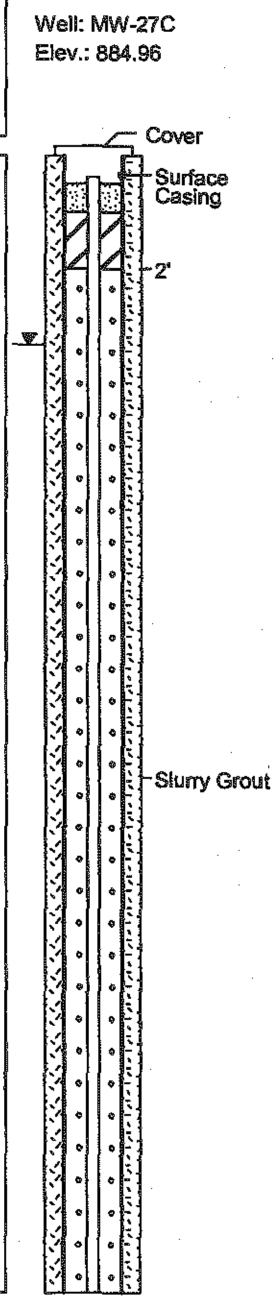


Hole Diamater: 4 inch augers
Sampling Method: Blind Drill / No Sampling
Drill Rig: CME 750

WESTON - EARTH TECH	LOG OF BORING MW-27C
	(Page 1 of 2)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location: : Fowlerville, MI Date: : 12/9/03-12/11/03 Drilling Method: : CME 750 Subcontractor: : Stearns Drilling Driller: : B. Graham	Geologist: : C. Kolke Checked By: : P. Mcguire Northing Coordinate: : 422139.4 Easting Coordinate: : 13201096.0 Ground Elevation: : 885.34'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0	SW		SAND (SW): black, fine to medium, some silt, moist, topsoil	0		
1–2	SC		CLAYEY SAND (SC): tan, medium, some clay, moist, loose, slight cohesion	1 2 3 2	1	
3	SP		SAND (SP): tan, fine to medium, loose, moist	2 3 3	2	Water Level-2.97' TOC 12/18/03
4	SP		SAND (SP): tan, fine to medium, loose, saturated	2 2		
5	GW		GRAVEL (GW): tan, some sand, semi-angular, saturated	4	3	
6–7	CL/ML		SITLY CLAY (CL/ML): gray, trace coarse, angular, sand, plastic, medium soft	6 2 3 4 7	4	
8–11	SP		SAND (SP): gray, medium to coarse, sand, trace semi-rounded gravel, loose, saturated	2 3 3 13 8 8 8	5 6	
12	GC		CLAYEY GRAVEL (GC): gray, angular, trace coarse sand, saturated, slight cohesion	6 10		
13	GP		GRAVEL (GP): gray, angular, saturated, loose	8 8 9	7	
14	SP		SAND (SP): gray, coarse, angular, saturated, loose	2 3		
15–16	GC		CLAYEY GRAVEL (GC): gray, semi-angular, trace fine sand, saturated, slight cohesion	6 8 6 7	8	
17	ML		SILT (ML): gray, saturated, stiff	13 12	9	
18–19	SM		SILTY SAND (SM): gray, fine to coarse, angular, loose, saturated	6 10 14	10	
20	CL/ML		SILTY CLAY (CL/ML): gray, trace coarse, angular, sand	14		



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

LOG OF BORING MW-27C

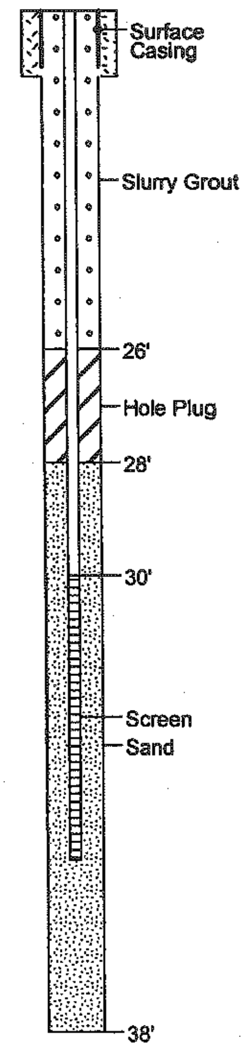
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/9/03-12/11/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422139.4
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201096.0
Driller:	: B. Graham	Ground Elevation:	: 885.34'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
20–23	CL/ML	SILTY CLAY (CL/ML): gray, trace coarse, angular, sand, stiff, non-plastic	8, 18, 14, 23, 13, 34	11, 12	
23–26.5	SL	SILTSTONE (SL): blue green, slightly weathered, stiff	25, 17, 4, 16, 19, 19, 12	12, 13, 14	
26.5–31	SS	SANDSTONE (SS): blue green to tan, silty, highly fractured	72, NR	14, 15, 16	Core Barrel used to take continuous core to depth from 28'
31–32	SL	SILTSTONE (SL): blue gray, stiff		16	
32–32.4	SS	SANDSTONE (SS): blue green, silty, heavily fractured		16	
32.4–35	SS	SANDSTONE (SS): gray, quartz, horizantal and vertical fractures, iron staining along fracture zones		17	3" microcrystalline pyrite crystallization zone at 34'
35–37	SL	SILTSTONE (SL): blue gray, stiff		17	
37–37.5	LC	CRYSTALINE LIMESTONE (LC): brownish gray		17	
37.5–38	SL	SILTSTONE (SL): blue gray, stiff		17	

End of Boring 38 feet bgs

Well: MW-27C
Elev.: 884.96



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

LOG OF BORING MW-28

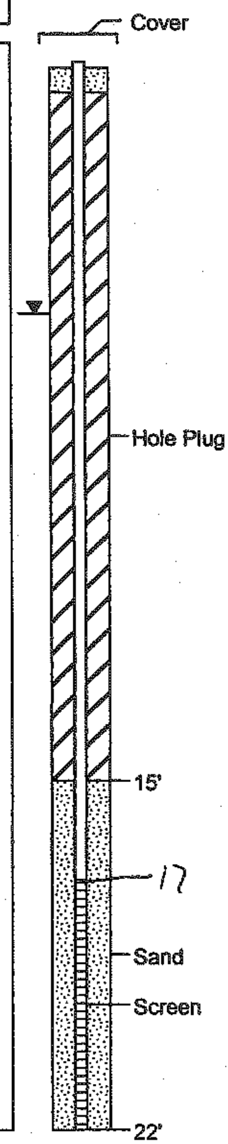
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/9/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422151.4
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13199528.6
Driller:	: B. Graham	Ground Elevation:	: 889.45'

Depth in Feet	USCS	DESCRIPTION
0–2	CL/ML	SILTY CLAY (CL/ML): brown with iron staining, trace coarse angular sand, non-plastic, stiff
2–10	CL/ML	SILTY CLAY (CL/ML): tan, some fine to coarse, angular, sand, plastic, soft
10–16	CL/ML	SILTY CLAY (CL/ML): gray, some fine to coarse, angular, sand, stiff, non-plastic
16–16.5	CL	CLAY (CL): gray, soft, plastic
16.5–21.5	SP	SAND (SP): gray, fine, loose, saturated
		SAND (SP): gray, fine, loose, saturated
21.5–22	GW	GRAVEL (GW): gray, angular, some sand, saturated
		End of Boring @ 22 feet bgs

Samples	Blow Count	REMARKS
1	4, 4, 3, 3	
2	3, 2, 2, 3	
3	1, 1, 1, 2	Water Level-5.13' TOC 12/18/03
4	1, 4, 6, 8	
5	4, 6, 13, 15	
6	3, 6, 9, 9	Blind Drill - Log is from MW-28C
7	4, 3, 6, 9	
8	3, 3, 6, 8	
9	7, 5, 2, 5	
10	1, 2, 2, 10	
11	4, 6, 6, 13	

Well: MW-28
Elev.: 888.94



Hole Diamater: 4 inch augers
Sampling Method: Blind Drill / No Sampling
Drill Rig: CME 750

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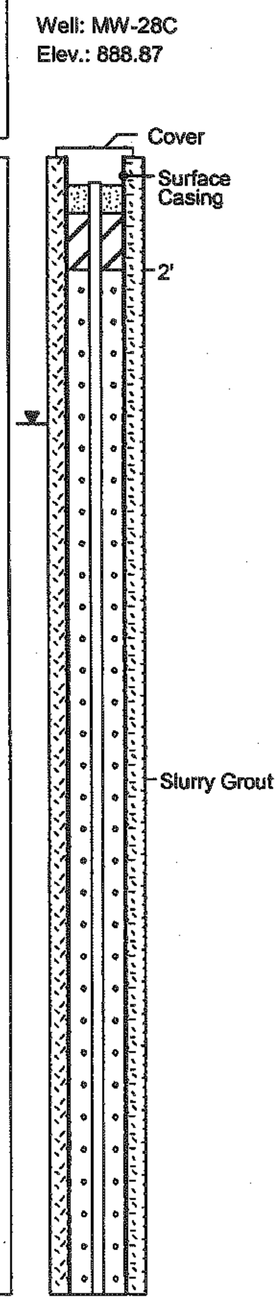
WESTON - EARTH TECH	LOG OF BORING MW-28C
	(Page 1 of 3)

Johnson Controls Former Stanley Tool Site Fowlerville, Michigan W.O. # 65468.02.01	Location:	: Fowlerville, MI	Geologist:	: C. Kotke
	Date:	: 12/9/03-12/16/03	Checked By:	: P. Mcguire
	Drilling Method:	: CME 750	Northing Coordinate:	: 422142.8
	Subcontractor:	: Steams Drilling	Easting Coordinate:	: 13199528.1
	Driller:	: B. Graham	Ground Elevation:	: 889.32'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
0–2	CL/ML	SILTY CLAY (CL/ML): brown with iron staining, trace coarse angular sand, non-plastic, stiff	4, 4, 3, 3	1	
2–10	CL/ML	SILTY CLAY (CL/ML): tan, some fine to coarse, angular, sand, plastic, soft	3, 2, 2, 3	2	
			1, 1, 1, 2	3	Water Level-4.73' TOC 12/18/03
			1, 4, 6, 8	4	
			4, 6, 13, 15	5	
10–16	CL/ML	SILTY CLAY (CL/ML): gray, some fine to coarse, angular, sand, stiff, non-plastic	3, 6, 9, 9	6	
			4, 3, 6, 9	7	
			3, 3, 6, 8	8	
16–16.5	CL	CLAY (CL): gray, soft, plastic	7, 5, 2, 5	9	
16.5–20	SP	SAND (SP): gray, fine, loose, saturated	1, 2, 2, 10	10	



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH

LOG OF BORING MW-28C

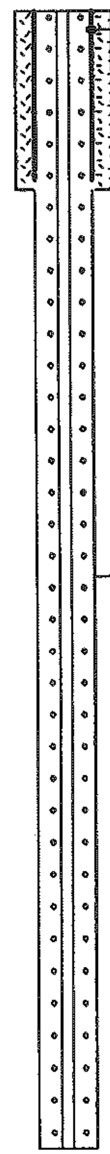
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/9/03-12/16/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422142.8
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13199528.1
Driller:	: B. Graham	Ground Elevation:	: 889.32'

Well: MW-28C
Elev.: 888.87

Depth in Feet	USCS	DESCRIPTION	REMARKS
20–21.5	SP	SAND (SP): gray, fine, loose, saturated	
21.5–22	GW	GRAVEL (GW): gray, angular, some sand, saturated	
22–28	CL/ML	SILTY CLAY (CL/ML): gray, some semi-rounded gravel and fine to medium sand, very stiff, non-plastic	
28–29.5	CL/ML	SILTY CLAY (CL/ML): gray, some semi-rounded gravel and fine to medium sand, very stiff, non-plastic	thin saturated sand seams
29.5–39.5	CL/ML	SILTY CLAY (CL/ML): gray, some semi-rounded gravel and fine to medium sand, very stiff, non-plastic	
39.5–40	SL	SILTSTONE (SL): blue green	

Samples	Blow Count
11	4, 6, 6, 13
12	23, 43, 54, 50
13	8, 33, 40, 40
14	28, 57, 79, 56
15	21, 31, 39, 39
16	21, 55, 70, 70
17	34, 44, 64, 69
18	12, 36, 43, 50
19	38, 88, 80, 53
20	18, 24, 31, 24



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

WESTON - EARTH TECH	LOG OF BORING MW-28C
	(Page 3 of 3)

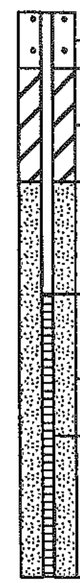
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/9/03-12/16/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422142.8
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13199528.1
Driller:	: B. Graham	Ground Elevation:	: 889.32'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
40–43	SL		SILTSTONE (SL): blue green	15, 15, 40, 23, 7, 13	21, 22	
43–44	SS		SANDSTONE (SS): brownish gray, silty, thin interbedded siltstone	81, 85	22	
44–45.5	SL		SILTSTONE (SL): blue green, trace sand	12, 31, 95	23	
45.5–47.5	SS		SANDSTONE (SS): gray, quartz	NR, 114, NR	24	
47.5–49	SL		SILTSTONE (SL): blue green, trace sand	41	25	
49–50	SS		SANDSTONE (SS): gray, quartz	75, NR	25	

End of Boring @ 50 feet bgs

Well: MW-28C
Elev.: 888.87



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH	LOG OF BORING MW-29
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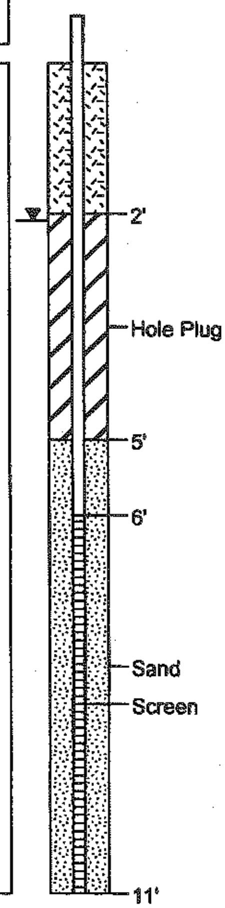
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/15/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422469.1
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201063.0
Driller:	: B. Graham	Ground Elevation:	: 884.34'

Depth in Feet	USCS	GRAPHIC	DESCRIPTION	Blow Count	Samples	REMARKS
0	ML		SILT (ML): dark brown, trace medium sand, moist	3		
0.5–3	SP		SAND (SP): tan, fine to medium, trace silt, loose, moist	3, 3, 3, 3, 6	1, 2	Water Level-4.53' TOC 12/18/03
3–3.5	SP		SAND (SP): tan, fine to medium, trace silt, loose, saturated	6	2	
3.5–4.5	CL/ML		SITLY CLAY (CL/ML): tan, some medium to coarse, semi-angular, sand, non-plastic, soft	4, 1	3	
4.5–7	CL/ML		SITLY CLAY (CL/ML): gray, trace medium, angular, sand, plastic, medium stiff	3, 3, 4, 2, 3	3, 4	Blind Drill - Log is from MW-29C
7–9.5	SP		SAND (SP): gray, fine, trace semi-angular gravel, loose, saturated	4, 6, 1, 1, 1	4, 5	
9.5–11	SP		SAND (SP): gray, medium to coarse, trace semi-rounded gravel, loose, saturated	3, 2, 3	6	
11			End of Boring 11 feet bgs			

Well: MW-29
Elev.: 886.78



12
13
14
15

Hole Diamater: 4 inch augers
Sampling Method: Blind Drill / No Sampling
Drill Rig: CME 750

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WESTON - EARTH TECH

LOG OF BORING MW-29C

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

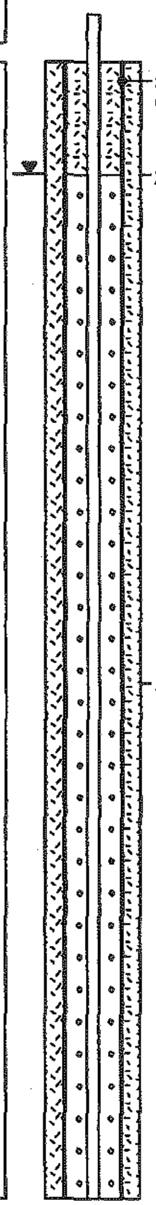
Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/12/03-12/17/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422471.0
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201056.5
Driller:	: B. Graham	Ground Elevation:	: 884.20'

USCS	DESCRIPTION
ML	SILT (ML): dark brown, trace medium sand, moist
SP	SAND (SP): tan, fine to medium, trace silt, loose, moist
SP	SAND (SP): tan, fine to medium, trace silt, loose, saturated
CL/ML	SITLY CLAY (CL/ML): tan, some medium to coarse, semi-angular, sand, non-plastic, soft
CL/ML	SITLY CLAY (CL/ML): gray, trace medium, angular, sand, plastic, medium stiff
SP	SAND (SP): gray, fine, trace semi-angular gravel, loose, saturated
SP	SAND (SP): gray, medium to coarse, trace semi-rounded gravel, loose, saturated
SM	SILTY SAND (SM): gray, fine to coarse, semi-rounded, loose, saturated
ML/CL	CLAYEY SILT (ML/CL): gray, some coarse, angular, sand, cohessive, soft, non-plastic
SW	SAND (SW): gray, fine to coarse, rounded, trace silt and gravel, loose, saturated
SP	SAND (SP): gray, fine, loose, saturated
ML/CL	CLAYEY SILT (ML/CL): gray, stiff, non-plastic
ML/CL	CLAYEY SILT (ML/CL): gray with weathered blue gray siltstone, some coarse, rounded, sand and limestone gravel, cohessive, stiff, non-plastic

Samples	Blow Count
1	3, 3, 3, 3
2	3, 6, 6, 4
3	1, 3, 3, 4
4	2, 3, 4, 6
5	1, 1, 1, 3
6	2, 3, 3, 3
7	2, 3, 4, 4
8	2, 2, 2, 4
9	2, 5, 3, 6
10	5, 15, 17, 15

REMARKS: Water Level-4.41' TOC 12/18/03

Well: MW-29C
Elev.: 886.62



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

WESTON - EARTH TECH

LOG OF BORING MW-29C

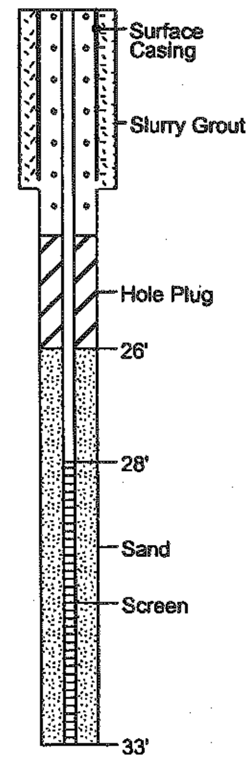
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 12/12/03-12/17/03	Checked By:	: P. Mcguire
Drilling Method:	: CME 750	Northing Coordinate:	: 422471.0
Subcontractor:	: Stearns Drilling	Easting Coordinate:	: 13201056.5
Driller:	: B. Graham	Ground Elevation:	: 884.20'

Depth in Feet	USCS	DESCRIPTION	Blow Count	Samples	REMARKS
20–21.5	ML/CL	CLAYEY SILT (ML/CL): gray with weathered blue gray siltstone, some coarse, rounded, sand and limestone gravel, cohessive, stiff, non-plastic	8, 14, 15	11	
21.5–28	SL	SILTSTONE (SL): blue green, interbedded sandstone, highly weathered, stiff	16, 9, 36, 13, 9, 3, 10, 10, 9, 7, 12, 13, 12	12, 13, 14	
28–31	SS	SANDSTONE (SS): gray, quartz, horizantal and vertical fractures, iron staining along fracture zones		15	Core Barrel used to take continuous core to depth from 28'
31–32.5	SL	SILTSTONE (SL): blue green, stiff			
32.5–33	SS	SANDSTONE (SS): gray, quartz, fractured			

End of Boring 33 feet bgs

Well: MW-29C
Elev.: 886.62



Hole Diamater: 12 inch and 4 inch augers, 2 inch Split Spoon
Sampling Method: Split Spoon Sampler
Drill Rig: CME 750

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WESTON - EARTH TECH	LOG OF BORING OE01 (Page 1 of 1)

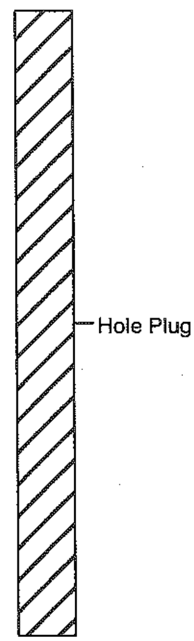
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 6/26/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	:
Subcontractor:	: ISI	Easting Coordinate:	:
Driller:	: Tony	Ground Elevation:	:

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–1.25		SP		SAND (SP): brown, fine to medium, fill, dry			Elevation is referenced to installation elevation and not to final grade elevation.
1.25–3.75		GP		GRAVEL (GP): gray, well rounded gravel, fill, dry GRAVEL (GP): gray, fill, saturated		1	
3.75–12		ML		SILT (ML): brownish gray, some fine to medium sand, trace clay, dry SILT (ML): brownish gray, some fine to medium sand, trace clay, very moist		2 3	

End of Boring @ 12 feet bgs

Well: OE01
Elev.:



Hole Diamater: 2 inch sampler
Sampling Method: Millslot Sampler
Drill Rig: Geoprobe Truck Mount

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WESTON - EARTH TECH

LOG OF BORING OE02

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location: : Fowlerville, MI
Date: : 6/27/03
Drilling Method: : Geoprobe
Subcontractor: : ISI
Driller: : Tony

Geologist: : C. Kotke
Checked By: : P. Mcguire
Northing Coordinate: :
Easting Coordinate: :
Ground Elevation: :

Well: OE02
Elev.:

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–1		SM		SILTY SAND (SM): black, fine to medium sand, topsoil, dry		1	Elevation is referenced to installation elevation and not to final grade elevation.
1–3		SW		SAND (SW): gray, fine to coarse sand, some silt, trace gravel, saturated			
3–8		ML		SILT (ML): brownish gray, some fine to medium sand, trace clay and gravel, dry		2	
8–9.5		ML		SILT (ML): brown, sand stringers <1/8" thick from 8'-9.5', saturated		3	
9.5–10.5		ML		SILT (ML): brownish gray, some fine to medium sand, trace clay and gravel, very moist			
10.5–12		SW		SAND (SW): gray, fine to coarse sand, trace silt and gravel, saturated			

End of Boring @ 12 feet bgs

Hole Plug

Hole Diamater: 2 inch sampler
Sampling Method: Millslot Sampler
Drill Rig: Geoprobe Truck Mount

WESTON - EARTH TECH	LOG OF BORING OE03 (Page 1 of 1)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 6/27/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	:
Subcontractor:	: ISI	Easting Coordinate:	:
Driller:	: Tony	Ground Elevation:	:

Well: OE03
Elev.:

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–3		SW		SAND (SW): gray, fine to coarse sand, some silt, trace gravel, saturated		1	Elevation is referenced to installation elevation and not to final grade elevation.
3–8		ML		SILT (ML): brownish gray, some fine to medium sand and clay, dry		2	
8–9.5		ML		SILT (ML): brown, sand stringers <1/8" thick from 8'-9.5', saturated		3	
9.5–12		ML		SILT (ML): gray, and fine to medium sand, trace clay, moist			
12				End of Boring @ 12 feet bgs			

Hole Plug

Hole Diamater: 2 inch sampler
Sampling Method: Millslot Sampler
Drill Rig: Geoprobe Truck Mount

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WESTON - EARTH TECH

LOG OF BORING OE04

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 6/27/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	:
Subcontractor:	: ISI	Easting Coordinate:	:
Driller:	: Tony	Ground Elevation:	:

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–2		SW		SAND (SW): gray, fine to coarse sand, some silt, trace gravel, saturated		1	Elevation is referenced to installation elevation and not to final grade elevation.
2–9.5		ML		SILT (ML): brownish gray, some fine to medium sand and clay, dry		2	
9.5–11		ML		SILT (ML): brown, sand stringers <1/8" thick from 8'-9.5', saturated		3	
11–12		ML		SILT (ML): gray, and fine to medium sand, trace clay, moist			
12–16		SP		SAND (SP): gray, fine to medium sand, some silt, saturated		4	

End of Boring @ 16 feet bgs

Well: OE04
Elev.:

Hole Plug

Hole Diamater: 2 inch sampler
Sampling Method: Millslot Sampler
Drill Rig: Geoprobe Truck Mount

WESTON - EARTH TECH

LOG OF BORING OE05

(Page 1 of 1)

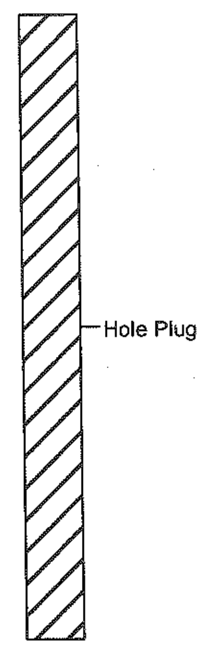
Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 6/27/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	:
Subcontractor:	: ISI	Easting Coordinate:	:
Driller:	: Tony	Ground Elevation:	:

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–3		SW		SAND (SW): gray, fine to coarse sand, some silt, trace gravel, saturated		1	Elevation is referenced to installation elevation and not to final grade elevation.
3–7.7		ML		SILT (ML): brownish gray, some fine to medium sand and clay, dry		2	
7.7–11		ML		SILT (ML): brown, sand stringers <1/8" thick from 8'-9.5', saturated		3	
11–12		ML		SILT (ML): gray, and fine to medium sand, trace clay, moist			

End of Boring @ 12 feet bgs

Well: OE05
Elev.:



Hole Diamater: 2 inch sampler
Sampling Method: Millslot Sampler
Drill Rig: Geoprobe Truck Mount

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WESTON - EARTH TECH

LOG OF BORING OE06

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 6/27/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	:
Subcontractor:	: IS1	Easting Coordinate:	:
Driller:	: Tony	Ground Elevation:	:

Well: OE06
Elev.:

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–3		SW		SAND (SW): gray, fine to coarse sand, some silt, trace gravel, saturated		1	Elevation is referenced to installation elevation and not to final grade elevation.
3–7.8		ML		SILT (ML): brownish gray, some fine to medium sand and clay, dry		2	
7.8–11		ML		SILT (ML): brown, sand stringers <1/8" thick from 8'-9.5', saturated		3	No Return 8'-12'. It is assumed that it is silt with sand stringers
11–12		ML		SILT (ML): gray, and fine to medium sand, trace clay, moist			

End of Boring @ 12 feet bgs

Hole Plug

Depth scale: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Hole Diamater: 2 inch sampler
Sampling Method: Millslot Sampler
Drill Rig: Geoprobe Truck Mount

11-10-2003 k:\12924002.001\Wells and Borings\OE06.bor

WESTON - EARTH TECH	LOG OF BORING OE07 (Page 1 of 1)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 6/26/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	:
Subcontractor:	: ISI	Easting Coordinate:	:
Driller:	: Tony	Ground Elevation:	:

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–2		SW		SAND (SW): gray, fine to coarse sand, some silt, trace gravel, saturated		1	Elevation is referenced to installation elevation and not to final grade elevation.
2–11.5		ML		SILT (ML): brownish gray, some fine to coarse sand and clay, trace gravel, dry		2, 3	
11.5–17.5		SP		SAND (SP): gray, fine to medium sand, saturated		4, 5	
				End of Boring @ 17.5 feet bgs			

Well: OE07
Elev.:

Hole Plug

Hole Diamater: 2 inch sampler
Sampling Method: Millslot Sampler
Drill Rig: Geoprobe Truck Mount

11-10-2003 k:\12924002.001\Wells and Borings\OE07.bor

WESTON - EARTH TECH	LOG OF BORING OE08 (Page 1 of 1)

Johnson Controls
Former Stanley Tool Site
Fowlerville, Michigan
W.O. # 65468.02.01

Location:	: Fowlerville, MI	Geologist:	: C. Kotke
Date:	: 6/26/03	Checked By:	: P. Mcguire
Drilling Method:	: Geoprobe	Northing Coordinate:	:
Subcontractor:	: ISI	Easting Coordinate:	:
Driller:	: Tony	Ground Elevation:	:

Depth in Feet	Surf. Elev.	USCS	GRAPHIC	DESCRIPTION	Recovery (inches)	Samples	REMARKS
0–1.2		SP		SAND (SP): brown, fine to medium sand, trace gravel, dry		1	Elevation is referenced to installation elevation and not to final grade elevation.
1.2–4		ML		SILT (ML): brownish gray, some fine to medium sand, trace clay, dry			
4–7.5		SP		SAND (SP): brown, medium to coarse sand, saturated		2	
7.5–12		ML		SILT (ML): gray, some fine sand, trace clay, very moist		3	

End of Boring @ 12 feet bgs

Well: OE08
Elev.:

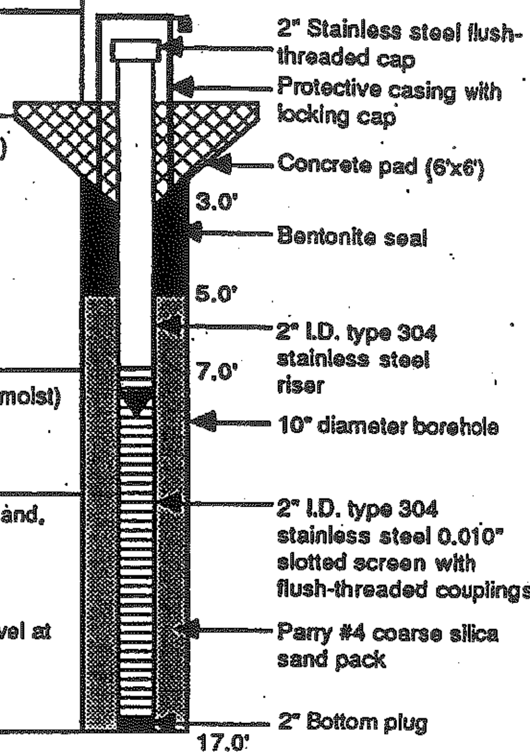
Hole Plug

Hole Diamater: 2 inch sampler
Sampling Method: Millslot Sampler
Drill Rig: Geoprobe Truck Mount

11-10-2003 k:\12924002.001\Wells and Borings\OE08.bor

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/30/90: ≥ 0.2 ppm Ground surface elevation: 885.45 feet, msl Top of casing elevation: 888.66 feet, msl
0				Black clayey SAND (medium dense; slightly moist) (fill)
5		54		
				Gray silty CLAY with some sand and fine gravel (stiff; moist)
10		16		Gray silty fine to medium SAND with trace of coarse sand, fine gravel and clay (medium dense; wet)
15	UL	9		grades with less silt, coarse sand and gravel at 14.5 feet
				Boring completed at 17.0 feet on 10/30/90. Monitoring well installed at 17.0 feet on 10/30/90.
20				

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

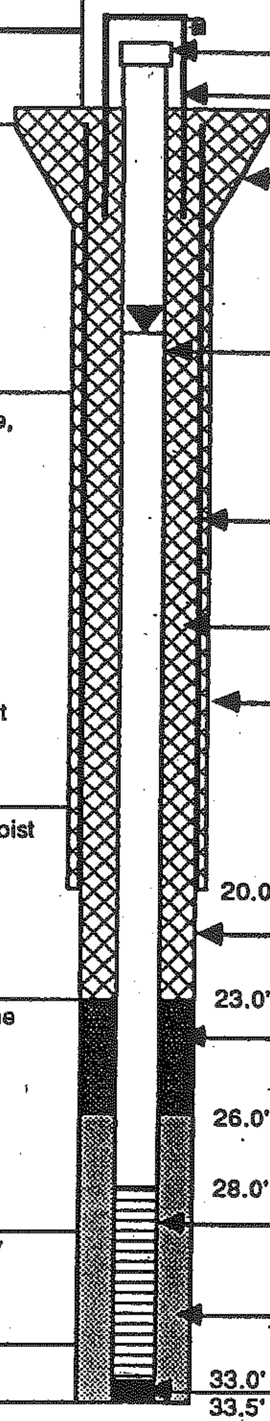
UL Undisturbed Liner Sample

Ground Water Level Measured at 8.70 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	**MONITORING WELL MW-A1**

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/24/90: ≥ 0.2 ppm Ground surface elevation: 885.67 feet, msl Top of casing elevation: 887.40 feet, msl
0				Black silty, sandy CLAY, medium stiff, moist (FILL)
5	Split Spoon	6		
				Gray silty fine SAND with medium to coarse sand loose, wet
10	UL	9		
15	Split Spoon	42		grades with some clay seams and dense at 15.5 feet
				Gray silty CLAY with some fine gravel, hard, slightly moist
20	Split Spoon	58		
	UL	133		Gray silty, clayey fine to medium SAND with trace of fine gravel, hard, slightly moist
25				
30	Split Spoon	145		Bluish-gray silty CLAY with trace of fine sand, hard, dry grades mottled brown mottling at 31.0 feet
	Split Spoon	0		Gray fine to medium SANDSTONE
35				Boring completed at 33.5 feet on 11/14/90. Monitoring well installed at 33.0 feet on 11/14/90.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample | UL Undisturbed Liner Sample | Ground Water Level Measured at 7.11 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore
Job No. 03163-029-121

Stanley Tools
Fowlerville, Michigan

MONITORING WELL MW-A2

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL

HNu background reading on 11/15/90: 0.2 ppm
Ground surface elevation: 885.67 feet,msl
Top of casing elevation: 887.09 feet, msl

0

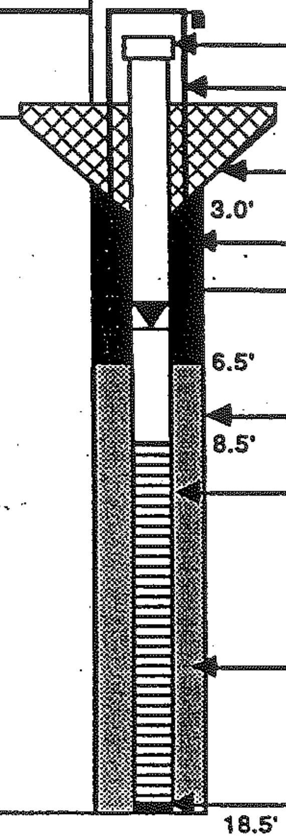
See MW-A2 for soil descriptions

5

10

15

20



Boring completed at 18.5 feet on 11/15/90.
Monitoring well installed at 18.5 feet on 11/15/90.

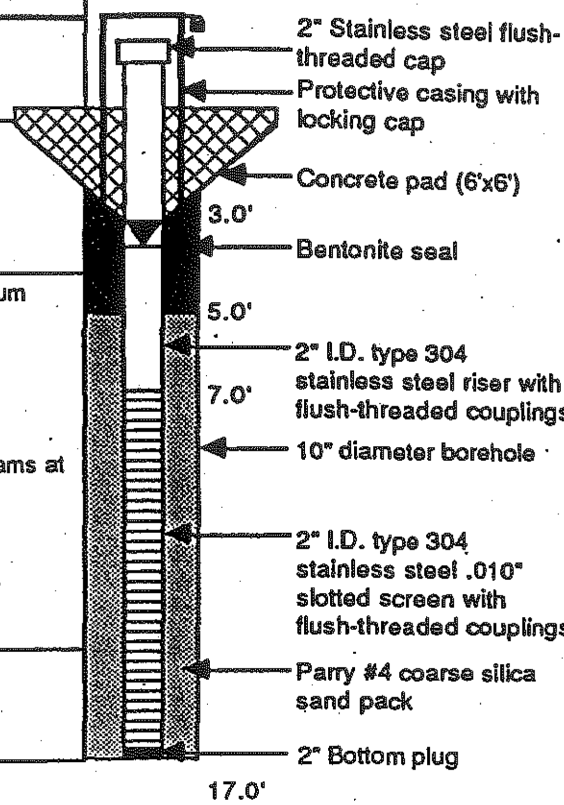
LEGEND:

▼ Ground Water Level Measured at 7.07 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	Stanley Tools Fowlerville, Michigan	MONITORING WELL MW-A3

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/26/90: ≥ 0.2 ppm Ground surface elevation: 884.66 feet, msl Top of casing elevation: 888.49 feet, msl
0				Brown fine SAND, moist (FILL)
				grades black at 3.0 feet
5		27		Gray silty fine to medium SAND with some fine to medium gravel, medium dense, wet
10		27		grades with more silt and some clayey seams at 9.0 feet
15		94		Gray silty, sandy CLAY with some gravel, hard, moist
				Boring completed at 17.0 feet on 10/26/90. Monitoring well installed at 17.0 feet on 10/26/90.
20				

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

Ground Water Level Measured at 7.01 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore

Job No. 03163-029-121

Stanley Tools

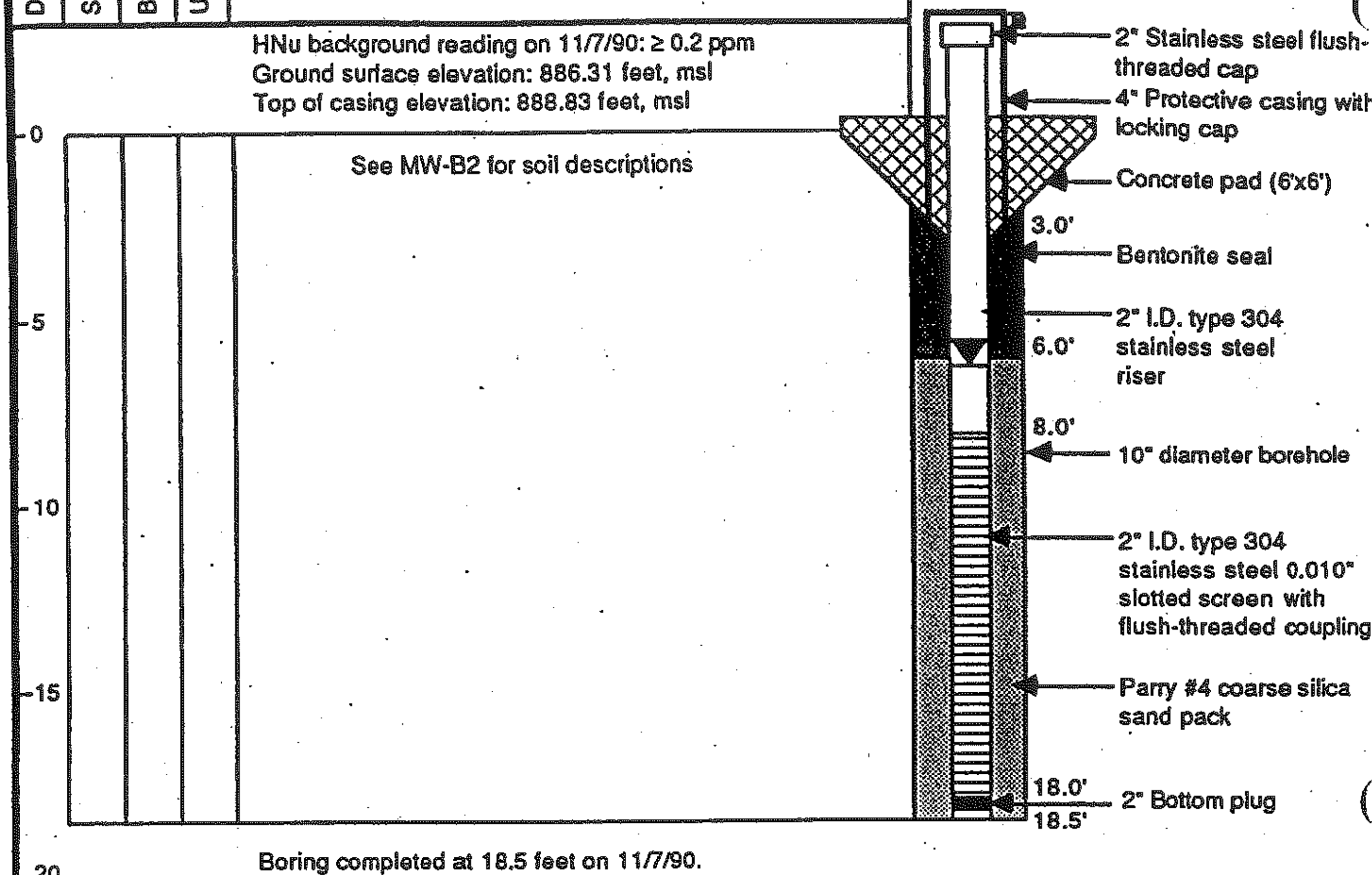
Fowlerville, Michigan

MONITORING WELL MW-A4

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL

HNu background reading on 11/7/90: ≥ 0.2 ppm
Ground surface elevation: 886.31 feet, msl
Top of casing elevation: 888.83 feet, msl

See MW-B2 for soil descriptions



Boring completed at 18.5 feet on 11/7/90.
Monitoring well installed at 18.0 feet on 11/7/90.

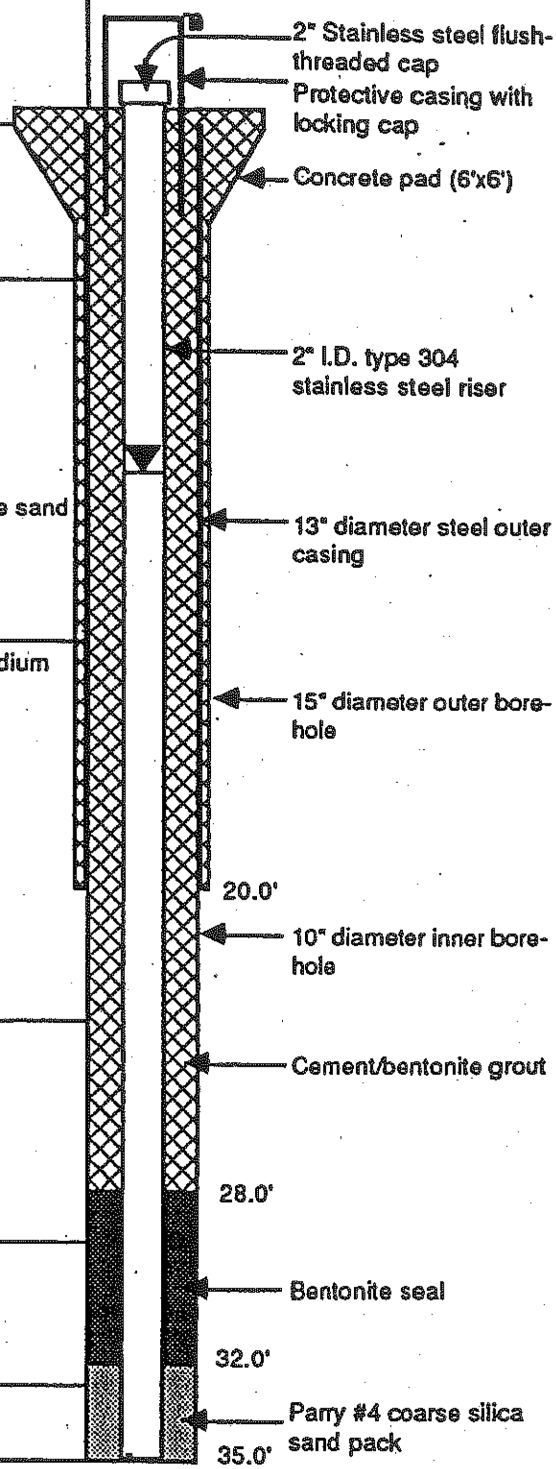
LEGEND:

▼ Ground Water Level Measured at 8.72 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	Stanley Tools Fowlerville, Michigan	MONITORING WELL MW-B1

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 11/7/90: ≥ 0.2 ppm Ground surface elevation: 886.31 feet, msl Top of casing elevation: 886.82 feet, msl
0				Brown fine SAND, moist (FILL) grades to black at 2.0 feet
5		18		Brown silty fine SAND, medium dense, wet
10		27		grades to gray with some medium to coarse sand and fine gravel at 10.0 feet
15		42		Gray silty, sandy CLAY with some medium gravel, medium stiff, slightly moist
20	UL	73		
25		125		Brown silty SAND with gravel, dense, moist grades with larger gravel at 28.0 feet
30		111		Gray silty, sandy CLAY, stiff, slightly moist
35		110		Bluish-gray silty CLAY, stiff, dry

WELL CONSTRUCTION DETAIL



Dames & Moore
Job No. 03163-029-121

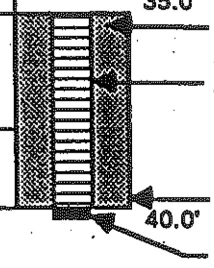
Stanley Tools
Fowlerville, Michigan

MONITORING WELL MW-B2

Depth (Feet)	Sample Location	Blows/ft. Sample	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
35				grades with brown mottling at 37.0 feet
		100/ 2"		Gray fine-grained SANDSTONE (wet)
40				
45				

Boring completed at 40.0 feet on 11/7/90.
Monitoring well installed at 40.0 feet on 11/7/90.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

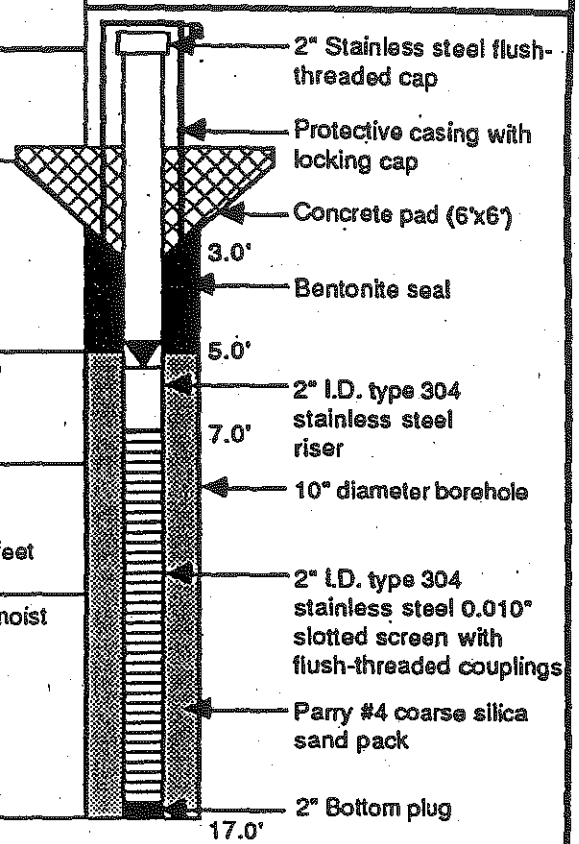
UL Undisturbed Liner Sample

Ground Water Level Measured at 9.10 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-B2

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/30/90: ≥ 0.2 ppm Ground surface elevation: 886.99 feet, msl Top of casing elevation: 889.15 feet, msl
0				Brown fine SAND (moist) (fill)
				grades to black at 3.0 feet
5		16		Brown sandy CLAY with some silt (medium stiff; moist) grades gray at 6.5 feet
				Gray silty fine SAND with some silt seams
10		10		grades with some medium gravel at 10.5 feet
				Gray silty CLAY with some fine gravel, medium stiff, moist
15		20		
				Boring completed at 17.0 feet on 10/30/90. Monitoring well installed at 17.0 feet on 10/30/90.
20				

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

Ground Water Level Measured at 7.73 Feet Referenced to Top of Casing on 10/30/90

Dames & Moore

Job No. 03163-029-121

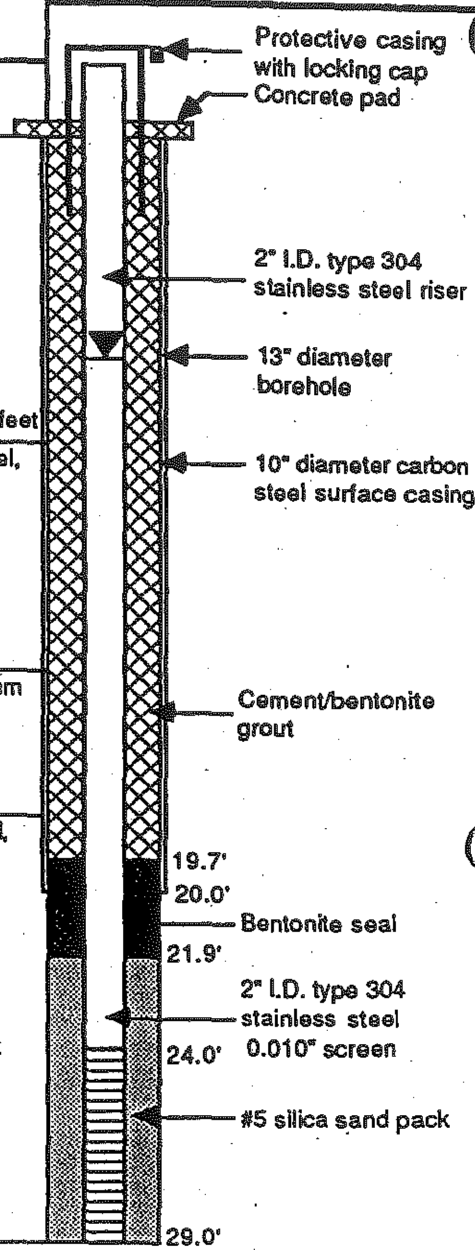
Stanley Tools

Fowlerville, Michigan

MONITORING WELL MW-B3

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 889.15 feet, msl Ground Surface Elevation: 886.86 feet, msl
0						Brown silty CLAY with trace of fine to medium sand, soft, moist (FILL) grades mottled brown and dark gray at 2.5 feet petroleum odor at 3.0 feet
5	Split spoon	2	67	8.7		
						grades with trace gravel from 7.5 to 8.0 feet
						Dark gray fine to medium SAND with trace fine gravel, loose, wet
10	Split spoon	3	67	16.0		strong petroleum odor at 9.0 feet
15	Split spoon	27	75	1.4		Gray clayey fine to medium SAND with fine to medium gravel, medium dense, moist grades with more gravel from 17.0 feet
						Brownish-gray sandy CLAY with trace of fine gravel, stiff, dry (TILL)
20						
	Split spoon	38	67	-		grades with more silt at 23.0 feet
	Split spoon	36	92	-		grades with more fine to medium sand at 24.0 feet
25	Split spoon	57	83	-		grades more moist from 25.0 feet
	Split spoon	74	92	-		
30						Boring completed at 29.0 feet on 1/20/94. Monitoring well installed at 29.0 feet on 1/20/94.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

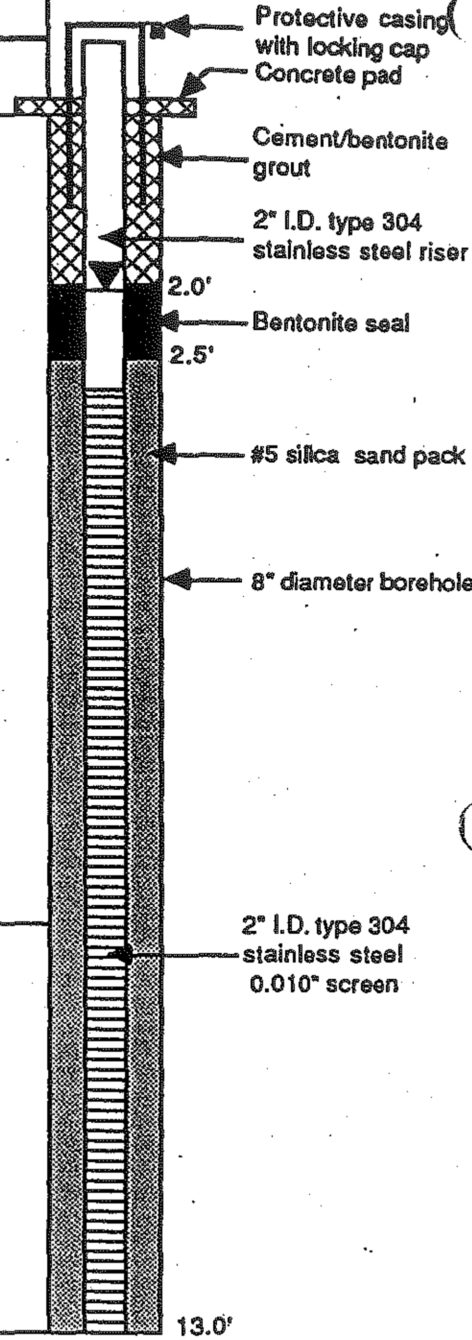
\- Not Recorded

Ground Water Level Measured at 8.21 Feet, msl Referenced to Top of Casing on 2/15/94

Dames & Moore Job No. 03163-045-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-B4

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 886.98 feet, msl Ground Surface Elevation: 884.76 feet, msl
0						Brown silty CLAY, medium stiff, dry to moist
1		4	67	<1		
2						grades brownish-yellow at 2.2 feet
3		5	75	<1		
4						grades gray and moist at 4.0 feet
5		6	83	<1		
6						
7		9	100	<1		
8						
9		11	100	<1		Gray medium SAND, medium dense, wet
10						grades coarse at 10.0 feet
11		8	92	<1		
12						
13						Boring completed at 13.0 feet on 1/13/94. Monitoring well installed at 13.0 feet on 1/13/94.

WELL CONSTRUCTION DETAIL



LEGEND:

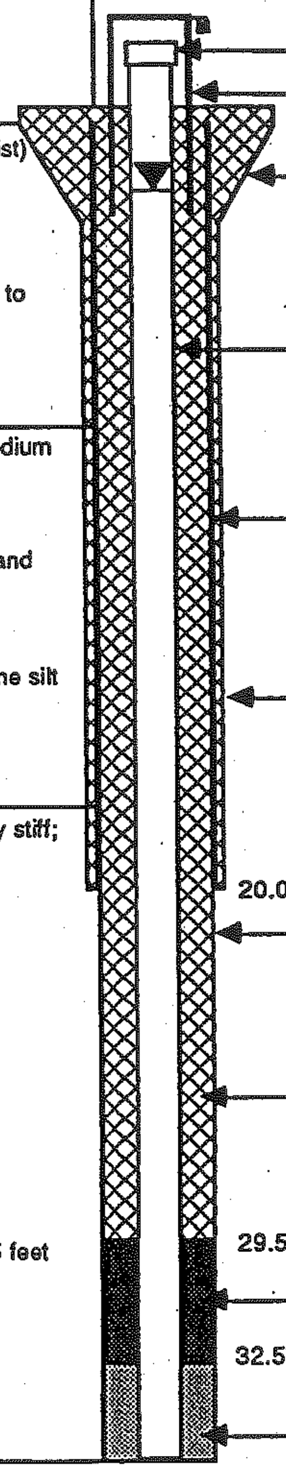
Split Spoon Sample

Ground Water Level Measured at 4.12 Feet, msl Referenced to Top of Casing on 2/15/94

Dames & Moore Job No. 03163-045-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-BCK 1

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/22/90: ≥ 0.2 ppm HNu background reading on 11/2/90: ≥ 0.2 ppm Ground surface elevation: 885.00 feet, msl Top of casing elevation: 887.55 feet, msl
0				Brown silty CLAY with gray mottling (medium stiff; moist)
				grades gray at 3.0 feet
				grades with fine to coarse sand and trace to some fine gravel at 4.5 feet
5		10		
				Gray fine SAND with some silt and medium gravel (medium dense; wet)
10		12		grades with coarse sand and trace of silt and gravel at 11.0 feet
				grades with trace of coarse sand and some silt at 14.5 feet
15		26		
				Gray silty CLAY with some fine sand and gravel (very stiff; slightly moist)
20		34		
25		92		grades hard and dry at 25.0 feet
				grades with fine to medium gravel at 29.5 feet
30		115		
	UL	95		grades without gravel at 34.5 feet
35				

WELL CONSTRUCTION DETAIL



Dames & Moore

Job No. 03163-029-121

Stanley Tools

Fowlerville, Michigan

MONITORING WELL MW-BCK2

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL
35	UL	95			35.0' Parry #4 coarse silica sand pack; 2" I.D. type 304 stainless steel 0.010 " screen with flush-threaded couplings
				Gray fine to medium grained SANDSTONE (wet)	10" diameter inner bore-hole
40		115			40.0' 2" Bottom plug 41.0'
				Boring completed at 41.0 feet on 11/2/90. Monitoring well installed at 40.0 feet on 11/2/90.	
45					

LEGEND:

Split Spoon Sample

UL Undisturbed Liner Sample

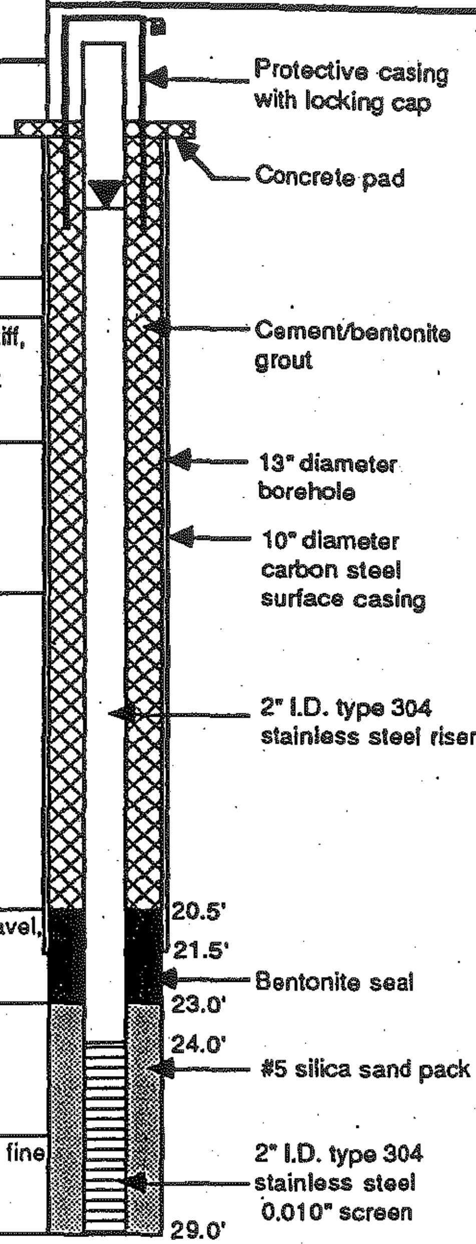
Ground Water Level Measured at 4.4 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-BCK2

Top of Inner Casing Elevation: 887.08 feet, msl
Ground Surface Elevation: 884.88 feet, msl

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
0		4	67	<1		Mottled brown with gray silty CLAY, soft to medium stiff, moist
		4	58	<1		
						Brown silty fine SAND, loose, wet
5		6	92	<1		Mottled brown silty CLAY with fine sand, medium stiff, moist
		10	92	<1		grades with more fine sand and stiff at 6.5 feet
		4	67	<1		Gray fine to medium SAND, loose, wet
10						
						Gray silty medium to coarse SAND with trace fine gravel, loose, wet
15		8	50	<1		grades with less coarse sand and fine gravel with more silt at 15.0 feet
20						
		79	100	<1		Gray fine to medium sandy CLAY with trace fine gravel, very stiff, slightly moist (TILL)
						Gray clayey fine to medium SAND with trace fine to medium gravel, medium dense to dense, wet
25		31	100	-		grades with less sand at 25.5 feet
		52	100	-		Gray silty CLAY with fine to medium sand and trace fine gravel, stiff, dry
		41	33	-		
30						

WELL CONSTRUCTION DETAIL



Boring completed at 29.0 feet on 1/17/94.
Monitoring well installed at 29.0 feet on 1/17/94.

LEGEND:

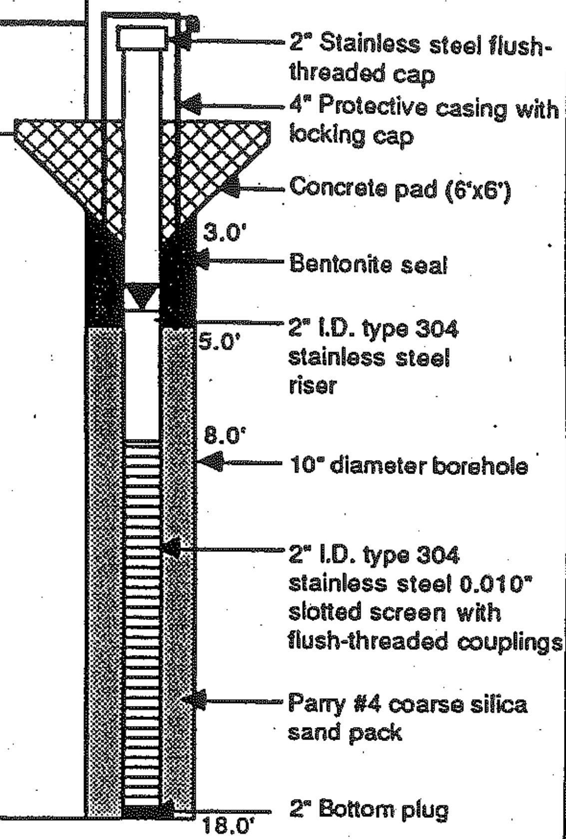
◩ Split Spoon Sample

\- Not Recorded

▼ Ground Water Level Measured at 4.22 Feet, msl Referenced to Top of Casing on 2/15/94

Dames & Moore Job No. 03163-045-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-BCK3

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL
				HNu background reading on 11/8/90: ≥ 0.3 ppm Ground surface elevation: 886.51 feet, msl Top of casing elevation: 888.80 feet, msl	
0				See MW-C2 for soil descriptions	
5					
10					
15					
20				Boring completed at 18.0 feet on 11/8/90. Monitoring well installed at 18.0 feet on 11/8/90.	



LEGEND:

▼ Ground Water Level Measured at 6.44 Feet Referenced to Top of Casing on 11/8/90

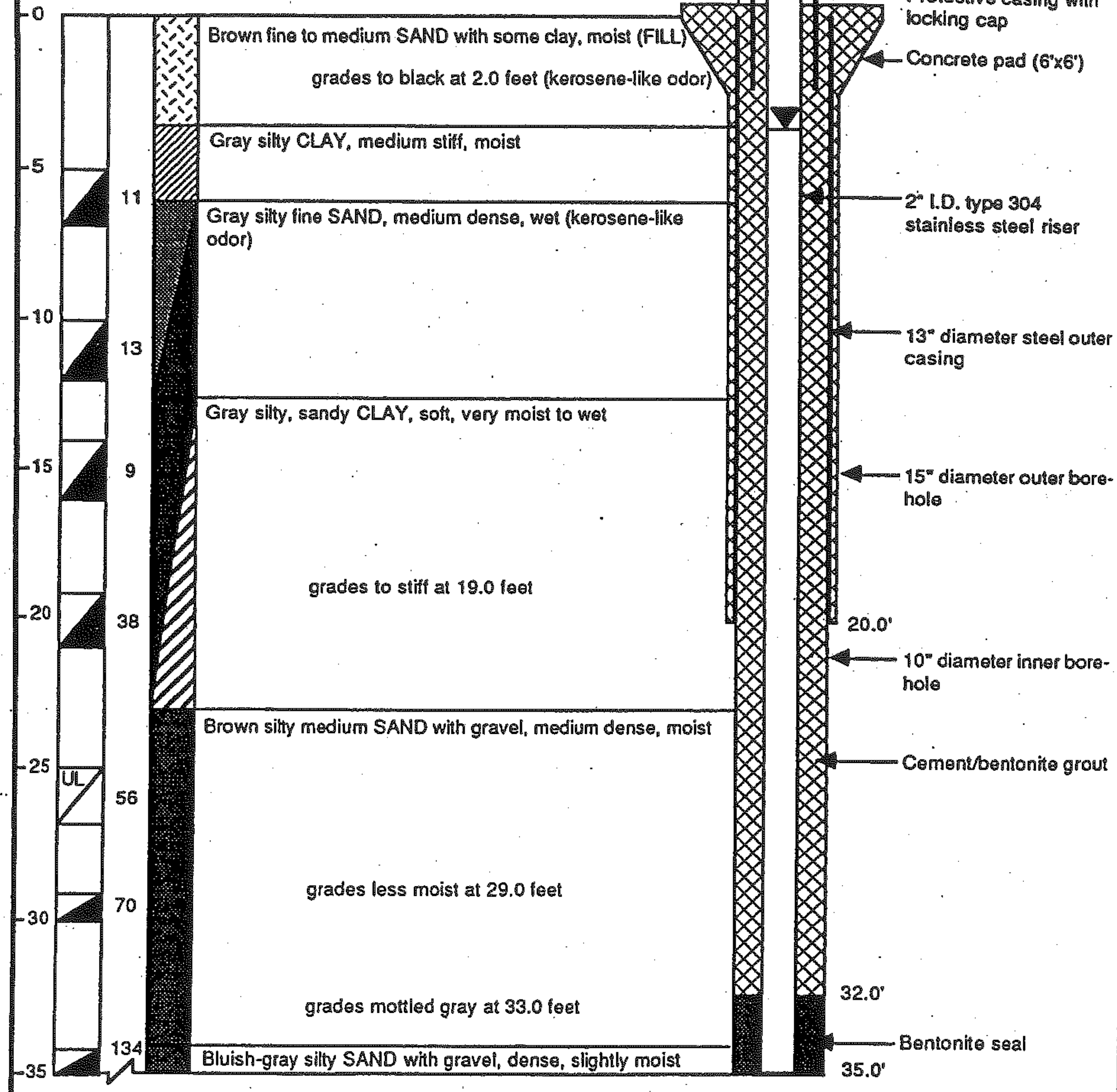
Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-C1

Depth (Feet) | Sample Location | Blows/ft. Sampler | USCS Symbol

DESCRIPTION OF SUBSURFACE MATERIALS

WELL CONSTRUCTION DETAIL

HNu background reading on 10/29/90: ≥ 0.2 ppm
Ground surface elevation: 886.51 feet, msl
Top of casing elevation: 888.93 feet, msl



Dames & Moore
Job No. 03163-029-121

Stanley Tools
Fowlerville, Michigan

MONITORING WELL
MW-C2

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL
35		134			35.0'
40		156		grades mottled brown without gravel and dry at 39.0 feet	39.0'
		110/1"		Gray SANDSTONE (very moist to wet)	44.0'
45				Boring completed at 44.0 feet on 11/8/90. Monitoring well installed at 44.0 feet on 11/8/90.	

LEGEND:

Split Spoon Sample

UL Undisturbed Liner Sample

Ground Water Level Measured at 6.92 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore

Job No. 03163-029-121

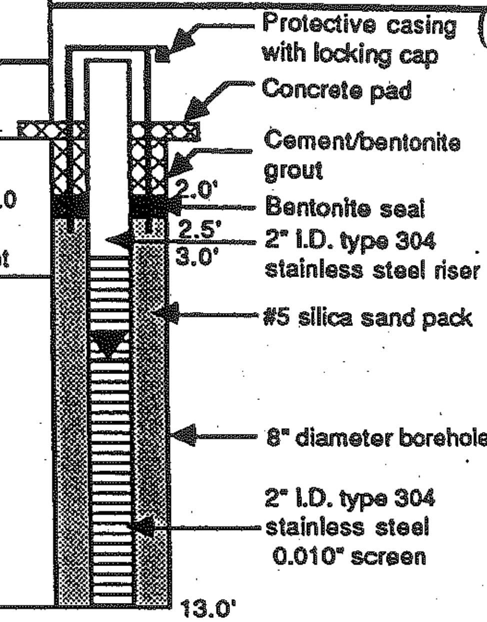
Stanley Tools

Fowlerville, Michigan

MONITORING WELL
MW-C2

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 889.02 feet, msl Ground Surface Elevation: 886.79 feet, msl
0		16	58	9		Brown CLAY, stiff, dry to moist (FILL) grades gray with petroleum odor at 2.0 feet
		9	75	19		grades with more fine sand at 2.8 feet
5		8	75	20		Gray SAND with clay, loose, moist grades brown with petroleum odor at 4.0 feet
		7	75	30		
10		3	75	20		grades black and wet at 8.2 feet petroleum odor from 8 to 10 feet
		7	100	20		petroleum odor at 10 feet
						Boring completed at 13.0 feet on 1/12/94. Monitoring well installed at 13.0 feet on 1/12/94.
15						

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

Ground Water Level Measured at 7.92 Feet, msl Referenced to Top of Casing on 2/8/94

Dames & Moore Job No. 03163-045-121	**Stanley Tools** Fowlerville, Michigan	**MONITORING WELL** **MW-C3**

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL

HNu background reading on 11/6/90: ≥ 0.2 ppm
Ground surface elevation: 885.69 feet, msl
Top of casing elevation: 888.65 feet, msl

0

See MW-E2 for soil descriptions

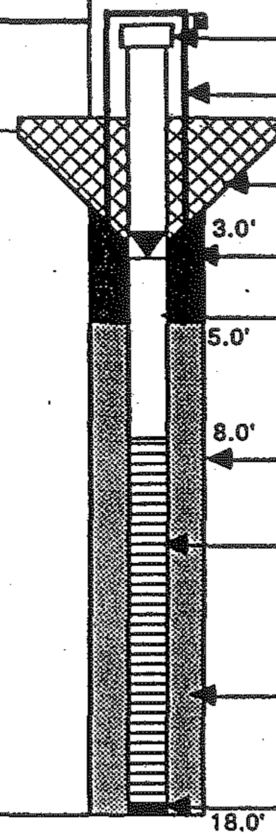
5

10

15

20

Boring completed at 18.0 feet on 11/6/90.
Monitoring well installed at 18.0 feet on 11/6/90.



LEGEND:

Ground Water Level Measured at 6.56 Feet Referenced to Top of Casing on 11/16/90

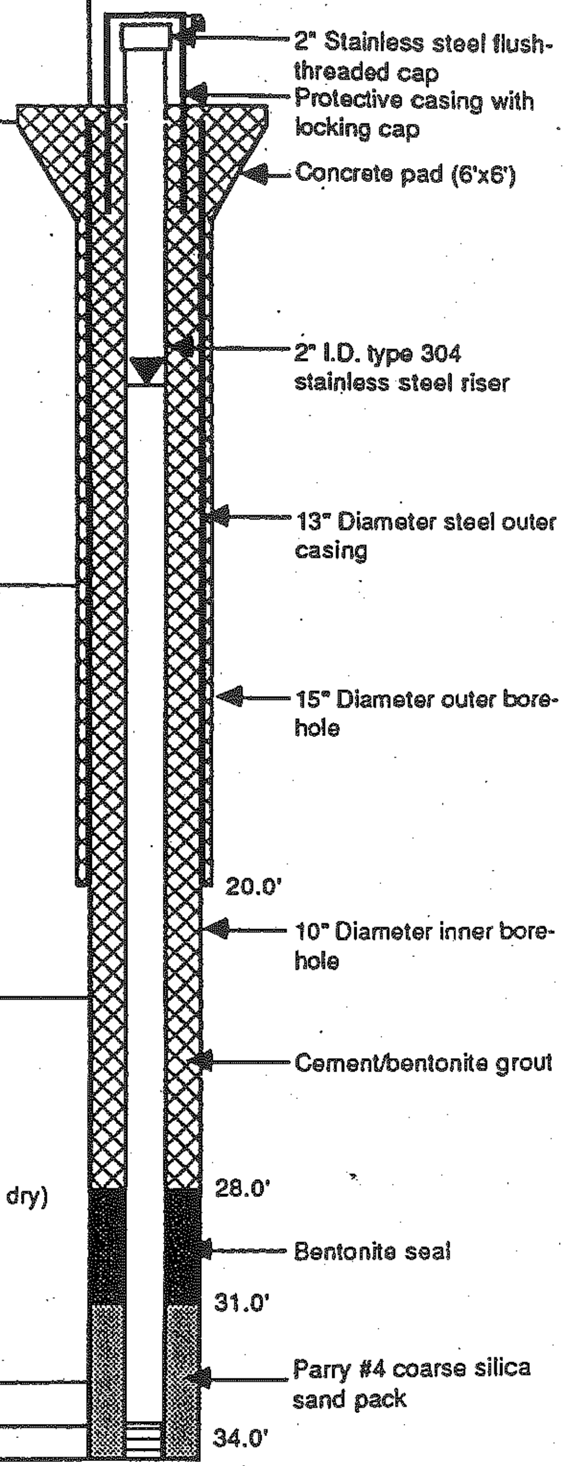
Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-E1

DESCRIPTION OF SUBSURFACE MATERIALS

HNu background reading on 10/26/90: ≥ 0.2 ppm
Ground surface elevation: 886.31 feet, msl
Top of casing elevation: 886.82 feet, msl

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	Description of Subsurface Materials
0				Black fine to medium SAND with some clay (fill)
5		18		grades with trace of clay at 5.0 feet (wet)
10		9		
				Gray silty, sandy CLAY (soft; moist)
15		63		grades with some fine to medium gravel at 14.0 feet (very stiff)
20		41		
				Brownish-gray silty SAND (stiff; dry)
25	UL	126		
				grades to bluish-gray fine silty sand (stiff; dry)
30		52		
				Brown fine SAND (dense; wet)
35		148		Bluish-gray sandy CLAY (stiff; dry)

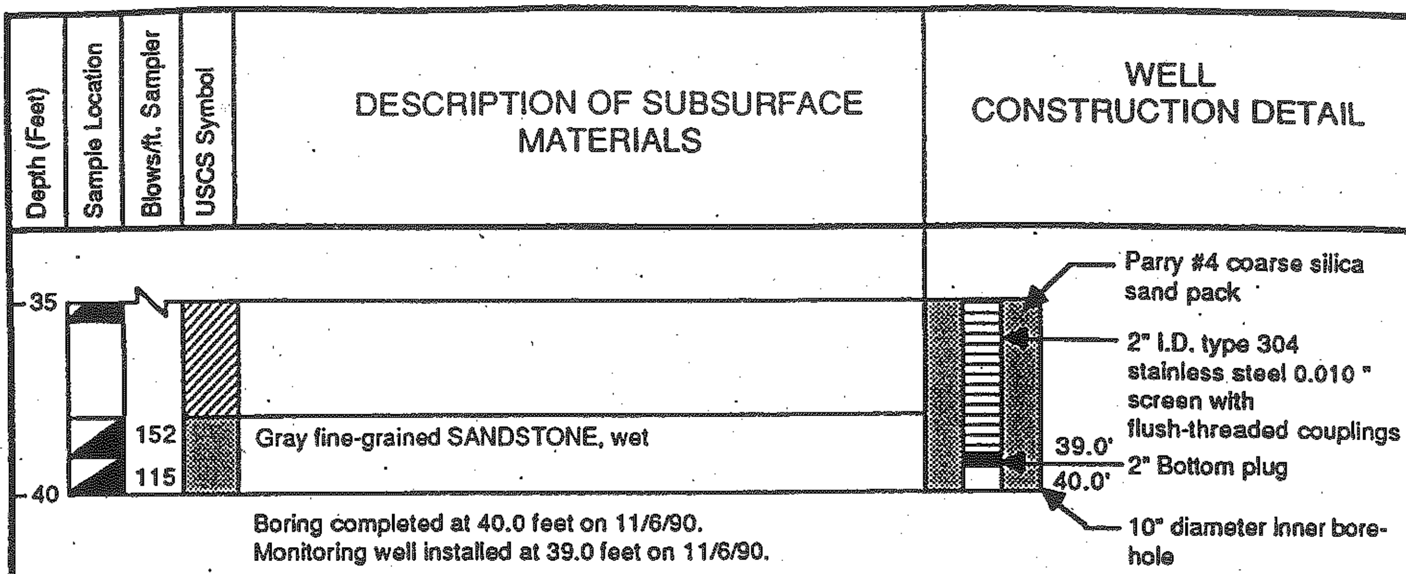
WELL CONSTRUCTION DETAIL



Dames & Moore
Job No. 03163-029-121

Stanley Tools
Fowlerville, Michigan

MONITORING WELL MW-E2



Boring completed at 40.0 feet on 11/6/90.
Monitoring well installed at 39.0 feet on 11/6/90.

LEGEND:

Split Spoon Sample

UL Undisturbed Liner Sample

Ground Water Level Measured at 7.68 Feet Referenced to Top of Casing on 11/16/90

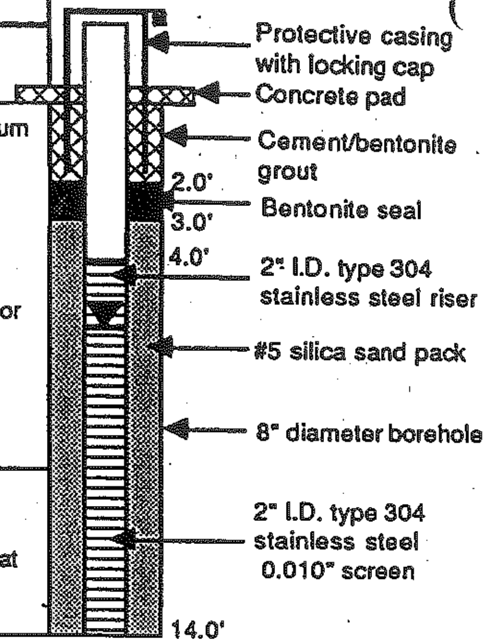
Dames & Moore
Job No. 03163-029-121

Stanley Tools
Fowlerville, Michigan

MONITORING WELL
MW-E2

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 887.88 feet, msl Ground Surface Elevation: 885.91 feet, msl
0		16	75	<1		Brown fine to medium SAND with clay and silt, medium dense, dry to moist
		11	88	-		
5		4	83	19.0		grades to dark gray with petroleum odor at 5.8'
		26	75	-		grades black and wet at 7.0 feet
		14	75	-		
10		11	17	-		Brown CLAY with fine to medium sand, stiff, moist
		14	75	<1		grades with more fine sand and moist at 12.0 feet
15						Boring completed at 14.0 feet on 1/12/94. Monitoring well installed at 14.0 feet on 1/12/94.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

\- Not Recorded

Ground Water Level Measured at 7.71 feet, above msl Referenced to Top of Casing on 2/15/94

Dames & Moore

Job No. 03163-045-121

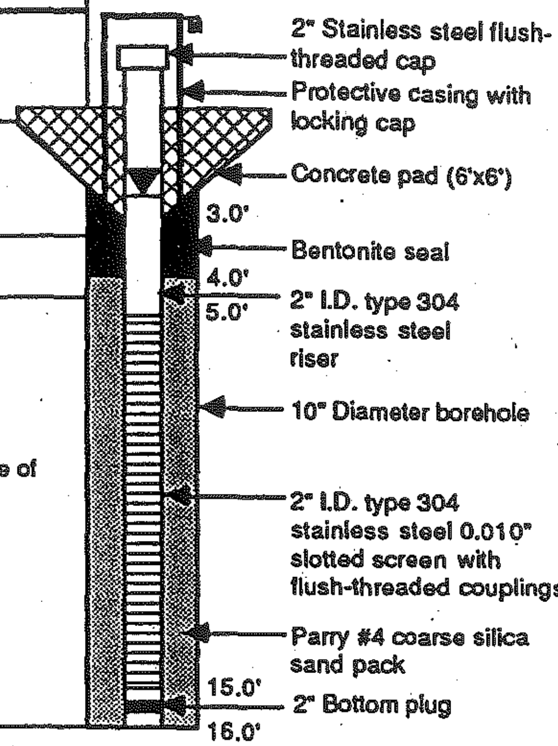
Stanley Tools

Fowlerville, Michigan

MONITORING WELL MW-E3

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/23/90: ≥ 0.2 ppm Ground surface elevation: 881.74 feet, msl Top of casing elevation: 883.72 feet, msl
0				Brown fine SAND with some silt and clay
				Gray silty CLAY (soft; moist to very moist)
5		4		Gray silty fine SAND with some coarse sand and fine gravel (medium dense; wet)
10		15		grades with very fine to fine sand and trace of coarse sand at 9.0 feet
				grades with some clay seams at 14.0 feet
15		16		
				Boring completed at 16.0 feet on 10/23/90. Monitoring well installed at 15.0 feet on 10/23/90.
20				

WELL CONSTRUCTION DETAIL



LEGEND:

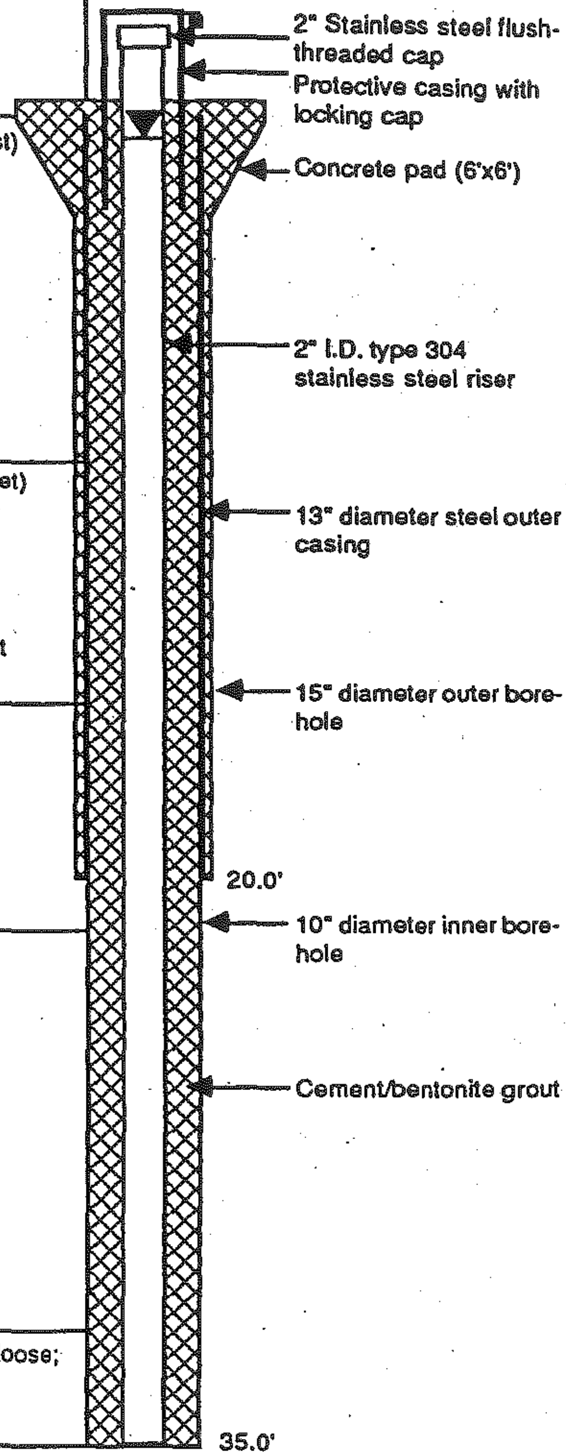
Split Spoon Sample

Ground Water Level Measured at 4.09 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	**MONITORING WELL** **MW-F1**

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/24/90: ≥ 0.2 ppm Ground surface elevation: 882.56 feet, msl Top of casing elevation: 884.33 feet, msl
0				Dark brown fine SAND with some gravel and clay (moist) (topsoil) grades with some concrete fragments at 1.5 feet
5		4		
10		5		Gray silty fine SAND with some coarse sand (loose; wet)
15		3		grades with silt and trace of coarse sand at 14.0 feet
				Gray silty, sandy CLAY (soft)
		7		grades to medium stiff
20				
				Bluish-gray medium SAND (loose; wet)
25		22		
30		25		
	UL	23		Gray clayey, silty SAND with gravel and tan mottling (loose; wet)
35				

WELL CONSTRUCTION DETAIL



Dames & Moore
Job No. 03163-029-121

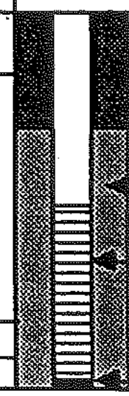
Stanley Tools
Fowlerville, Michigan

MONITORING WELL MW-F2

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
35				
				Gray silty sandy CLAY with gravel, stiff, moist
		66		
40				
		140		Dark gray SHALE, moist
45				Gray SANDSTONE, wet

Boring completed at 45.0 feet on 11/13/90.
Monitoring well installed at 45.0 feet on 11/13/90.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

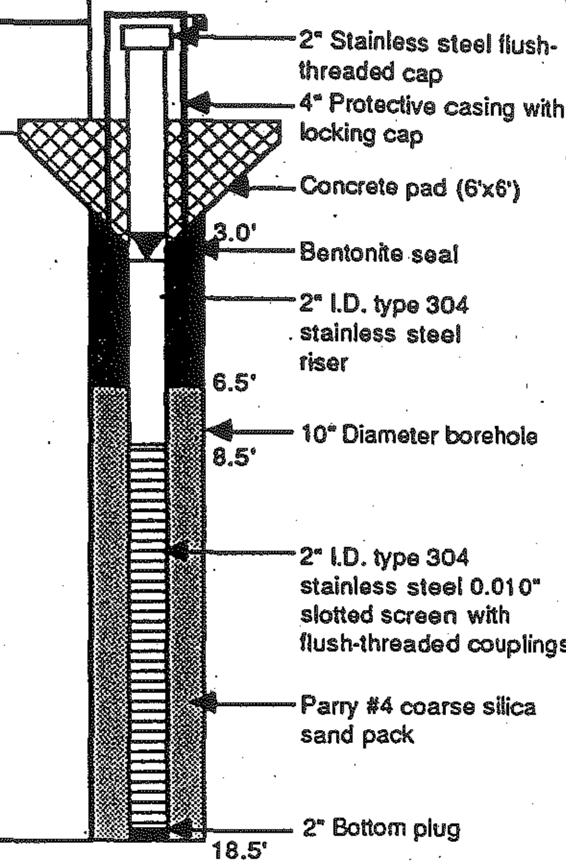
UL Undisturbed Liner Sample

Ground Water Level Measured at 2.39 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	**MONITORING WELL** **MW-F2**

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 11/15/90: ≥ 0.2 ppm Ground surface elevation: 882.56 feet, msl Top of casing elevation: 884.50 feet, msl
0				See MW-F2 for soil descriptions
5				
10				
15				
20				Boring completed at 18.5 feet on 11/15/90. Monitoring well installed at 18.5 feet on 11/15/90.

WELL CONSTRUCTION DETAIL



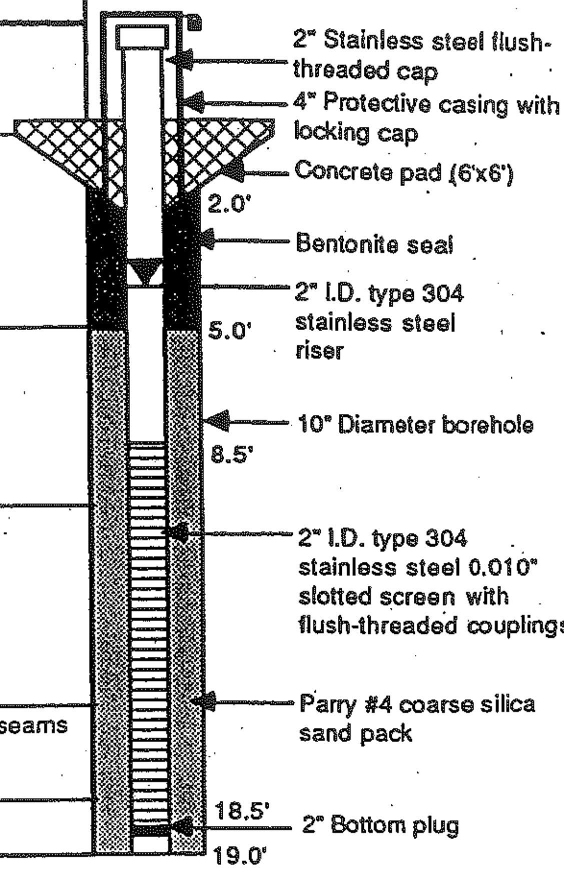
LEGEND:

▼ Ground Water Level Measured at 5.17 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-F3

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 11/7/90: ≥ 0.2 ppm Ground surface elevation: 883.29 feet, msl Top of casing elevation: 884.76 feet, msl
0				Dark brown SAND with some silt and clay (moist) (fill)
5		5		Gray fine to coarse SAND (loose; wet)
10		3		Gray sandy CLAY (soft; wet)
15		15		Gray fine to coarse SAND with gravel and alternating seams of clay (loose; wet)
				Gray sandy CLAY (soft; moist)
20				Boring completed at 19.0 feet on 11/14/90. Monitoring well installed at 18.5 feet on 11/14/90.

WELL CONSTRUCTION DETAIL



LEGEND:

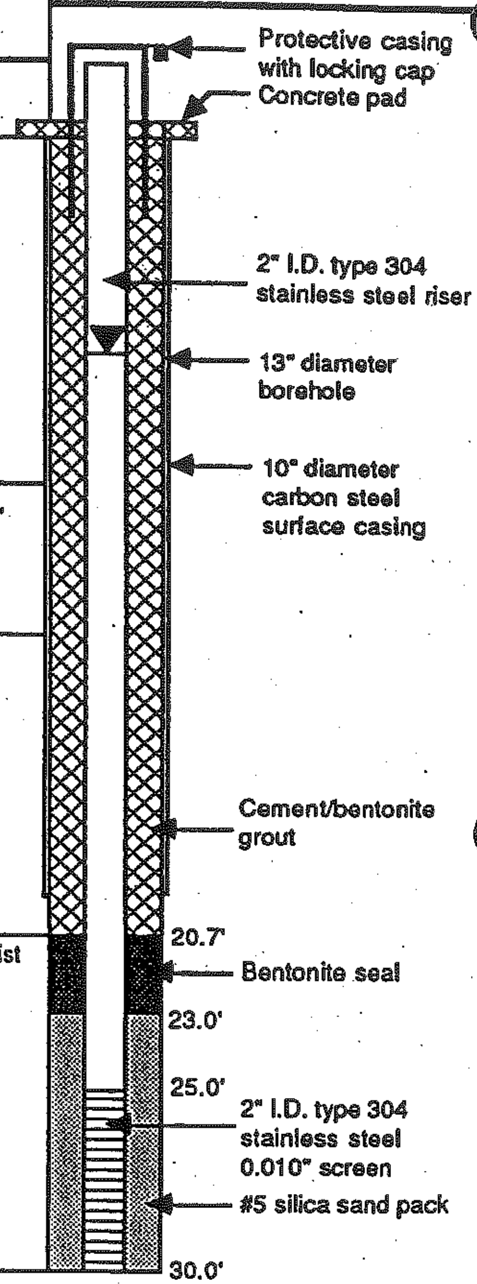
Split Spoon Sample

Ground Water Level Measured at 5.23 Feet Referenced to Top of Casing on 11/16/90.

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-F4

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 886.88 feet, msl Ground Surface Elevation: 884.81 feet, msl
0						Brown fine to medium SAND with clay, loose, moist
5		5	100	<1		grades medium to coarse and dark gray at 6.0 feet
10		1	-	<1		Dark gray silty CLAY with fine to medium sand, soft, moist to wet
15		2	-	<1		Gray medium to coarse SAND, loose, moist
		6	-	<1		
20						
		23	75	-		Brown silty CLAY with sandy gravel, stiff, dry to moist (TILL)
25		49	75	-		
30						

WELL CONSTRUCTION DETAIL



Boring completed at 30.0 feet on 1/20/94.
Monitoring well installed at 30.0 feet on 1/26/94.

LEGEND:

Split Spoon Sample

\- Not Recorded

Ground Water Level Measured at 7.24 Feet, msl Referenced to Top of Casing on 2/15/94

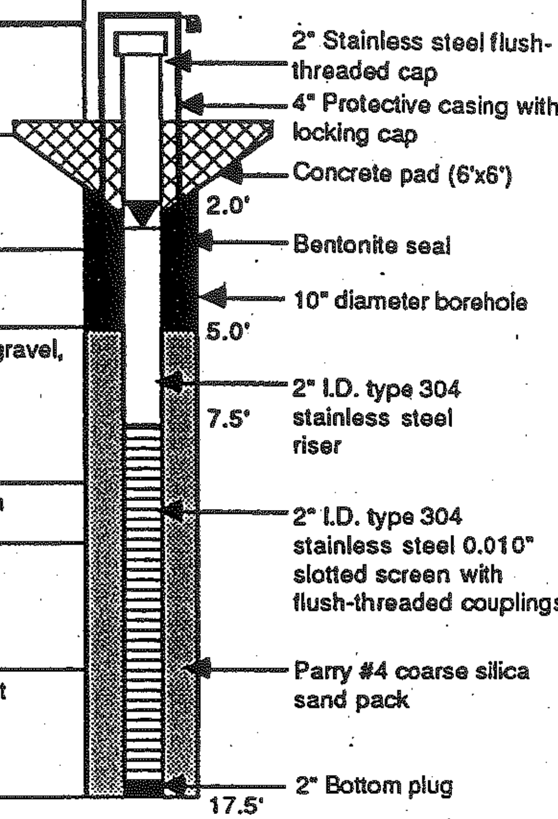
Dames & Moore
Job No. 03163-045-121

Stanley Tools
Fowlerville, Michigan

MONITORING WELL MW-F5

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 11/1/90: ≥ 0.2 ppm Ground surface elevation: 882.98 feet, msl Top of casing elevation: 885.41 feet, msl
0				Brown clayey fine SAND, moist (FILL)
				Black sandy CLAY with roots and twigs, moist
5	Split Spoon Sample	12		Gray silty fine SAND with some coarse sand and fine gravel, medium dense, wet
10	Split Spoon Sample	15		Brown silty sandy CLAY with some fine gravel, medium dense, moist
				Gray silty fine to coarse SAND, medium dense, wet
15	Split Spoon Sample	37		Gray silty sandy CLAY, medium stiff, very moist to wet
				Boring completed at 17.5 feet on 11/1/90. Monitoring well installed at 17.5 feet on 11/1/90.
20				

WELL CONSTRUCTION DETAIL



LEGEND:

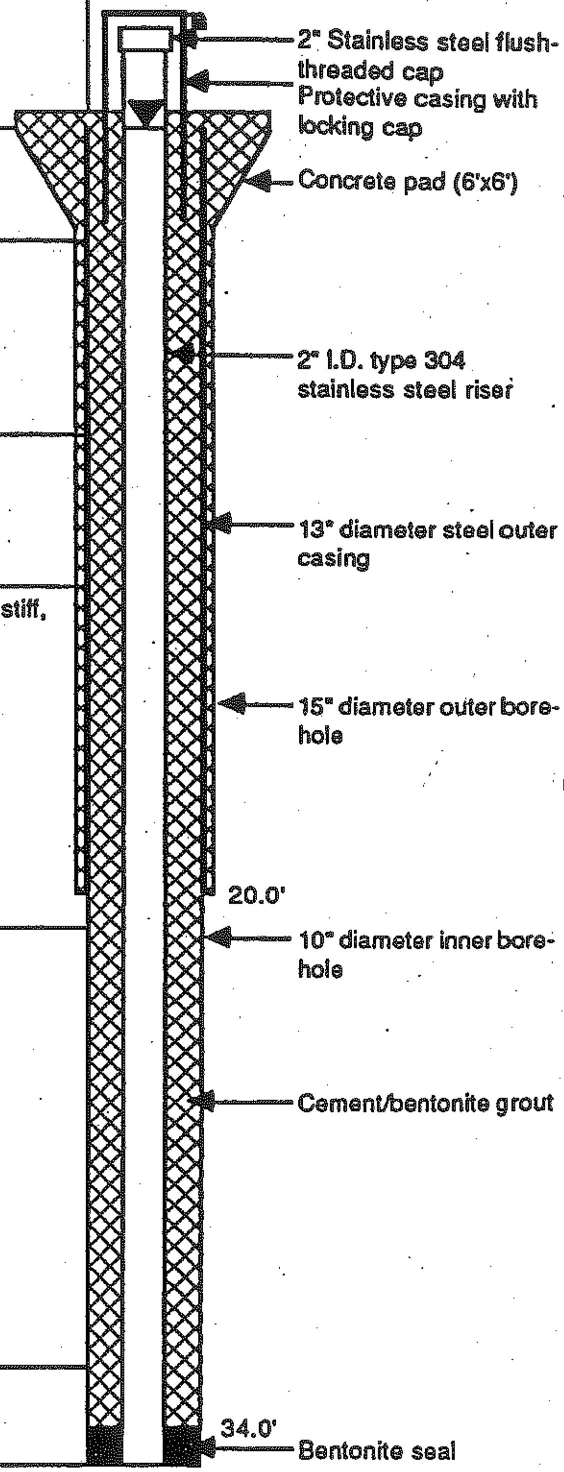
Split Spoon Sample

▼ Ground Water Level Measured at 4.80 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	Stanley Tools Fowlerville, Michigan	MONITORING WELL MW-G1

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/25/90: ≥ 0.2 ppm HNu background reading on 10/31/90: ≥ 0.2 ppm Ground surface elevation: 881.13 feet, msl Top of casing elevation: 883.84 feet, msl
0				Black clayey SAND, moist (TOPSOIL)
				Gray silty sandy CLAY, soft, moist
5		8		
				Gray silty fine SAND, loose, wet
10		2		
		115		Gray silty CLAY with some sand and fine gravel, very stiff, slightly moist to dry
15				
		148		grades to very stiff to hard and dry
20				
				Light gray fine SAND, wet
25		249		
		102		
30				
				Bluish-gray silty CLAY, very stiff to hard, dry
35		100		

WELL CONSTRUCTION DETAIL

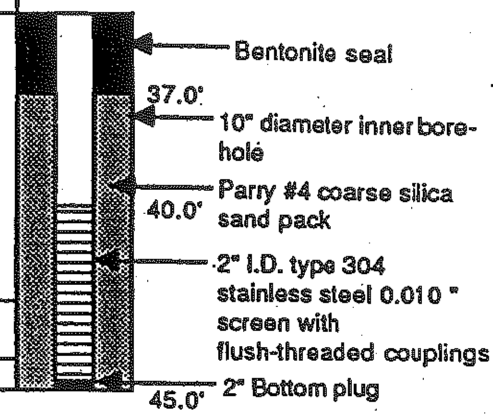


Dames & Moore
Job No. 03163-029-121

Stanley Tools
Fowlerville, Michigan

MONITORING WELL
MW-G2

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL
35					
		57		grades with alternating seams of fine-grained sandstone at 38.5 feet	
40					
				Light brown fine to medium SAND, medium dense, very moist to wet	
		68		Dark gray SHALE, dry	
45					



Boring completed at 45.0 feet on 10/31/90.
Monitoring well installed at 45.0 feet on 10/31/90.

LEGEND:

Split Spoon Sample

Ground Water Level Measured at 2.7 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	Stanley Tools Fowlerville, Michigan	MONITORING WELL MW-G2

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL

HNu background reading on 11/1/90: ≥ 0.2 ppm
Ground surface elevation: 881.13 feet, msl
Top of casing elevation: 884.12 feet, msl

0

See MW-G2 for soil descriptions

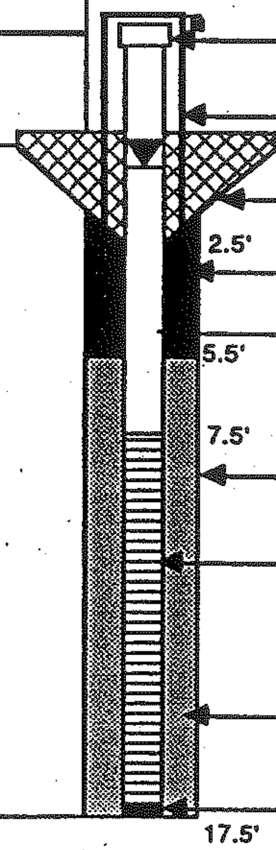
5

10

15

Boring completed at 17.5 feet on 11/1/90.
Monitoring well installed at 17.5 feet on 11/1/90.

20



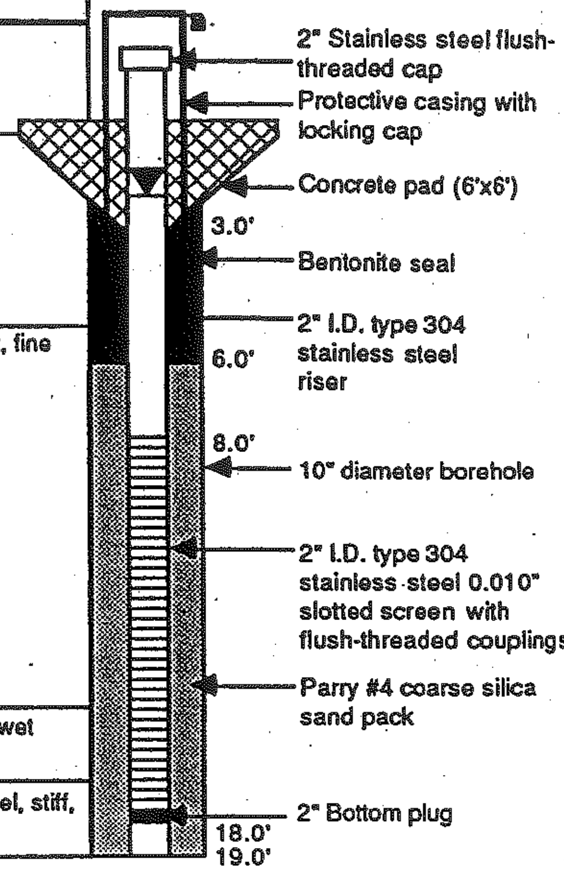
LEGEND:

▼ Ground Water Level Measured at 3.38 Feet Referenced to Top of Casing on 11/1/90

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	**MONITORING WELL** **MW-G3**

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 11/1/90: ≥ 0.2 ppm Ground surface elevation: 884.24 feet, msl Top of casing elevation: 886.82 feet, msl
0				Brown clayey fine SAND, moist (FILL)
5		9		Mottled brown and gray silty CLAY with some thin, wet, fine seams of sand, medium stiff, moist
				grades to gray, very moist
10		7		
15		4		Gray medium to coarse SAND with fine gravel, loose, wet
		40		Gray silty CLAY with some coarse sand and fine gravel, stiff, moist
20				Boring completed at 19.0 feet on 11/1/90. Monitoring well installed at 18.0 feet on 11/1/90.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

Ground Water Level Measured at 4.05 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	Stanley Tools Fowlerville, Michigan	MONITORING WELL MW-G4

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL

HNu background reading on 11/15/90: ≥ 0.2 ppm
Ground surface elevation: 886.24 feet, msl
Top of casing elevation: 888.24 feet, msl

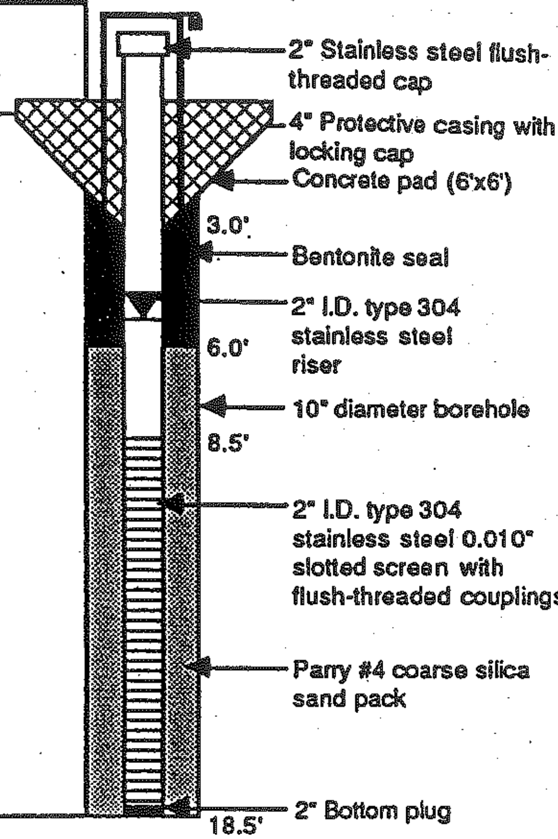
-0

See MW-J2 for soil descriptions

-5

-10

-15



-20

Boring completed at 18.5 feet on 11/15/90.
Monitoring well installed at 18.5 feet on 11/15/90.

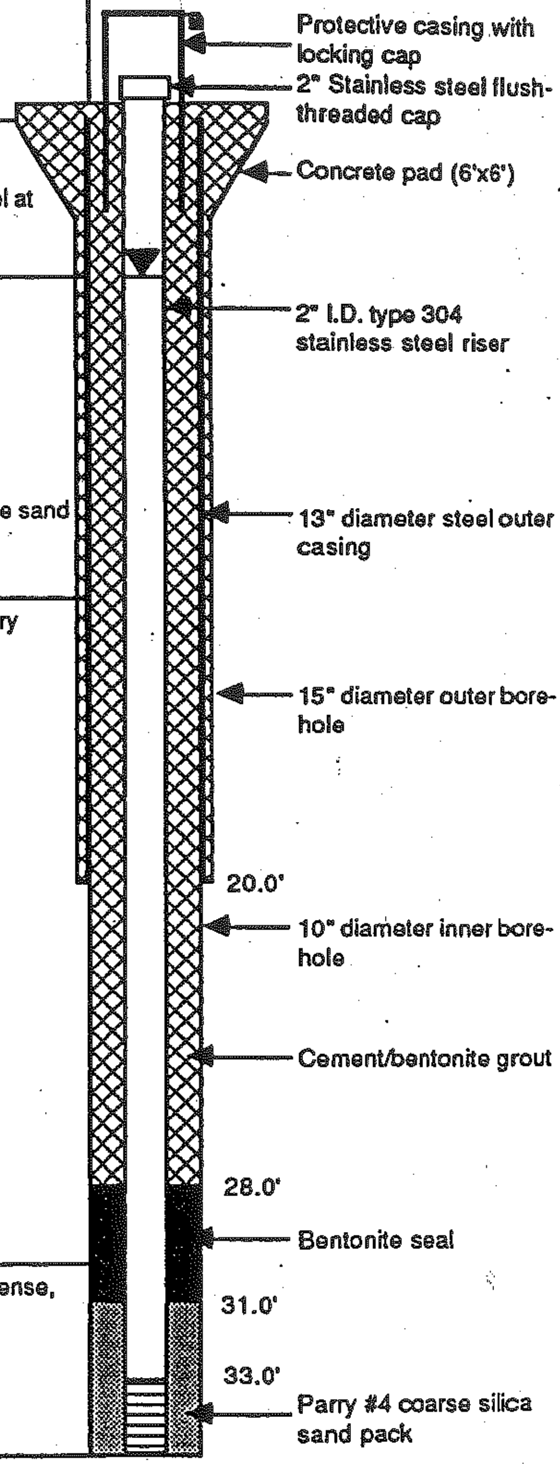
LEGEND:

▼ Ground Water Level Measured at 7.4 Feet Referenced to Top of Casing on 11/16/90

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	**MONITORING WELL** **MW-J1**

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
				HNu background reading on 10/30/90: ≥ 0.2 ppm HNu background reading on 11/12/90: ≥ 0.2 ppm Ground surface elevation: 886.24 feet, msl Top of casing elevation: 888.99 feet, msl
0				Brown fine SAND with some clay, moist (FILL) grades with some medium to coarse gravel at 2.0 feet
5		27		Brown fine SAND with some silt, medium dense, wet
10		7		grades to gray with some medium to coarse sand
				Gray silty CLAY with some fine sand, medium stiff, very moist
15		40		grades to sandy clay at 15.5 feet, soft
20		31		grades to medium stiff, moist
25		57		grades with gravel at 24.0 feet
30		49		Bluish-gray silty SAND with sandy clay lenses, very dense, slightly moist
35		80/6"		

WELL CONSTRUCTION DETAIL

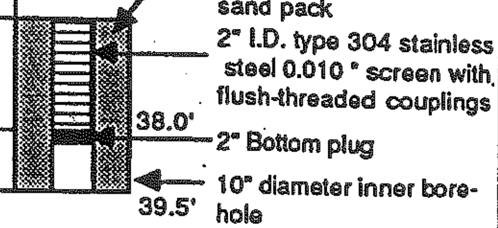


Dames & Moore
Job No. 03163-029-121

Stanley Tools
Fowlerville, Michigan

MONITORING WELL
MW-J2

Depth (Feet)	Sample Location	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS	WELL CONSTRUCTION DETAIL
35				grades with tan mottling at 36.5 feet	
		NA		Gray fine-grained SANDSTONE, wet	
40					



Boring completed at 39.5 feet on 11/12/90.
Monitoring well installed at 38.0 feet on 11/12/90.

LEGEND:

Split Spoon Sample

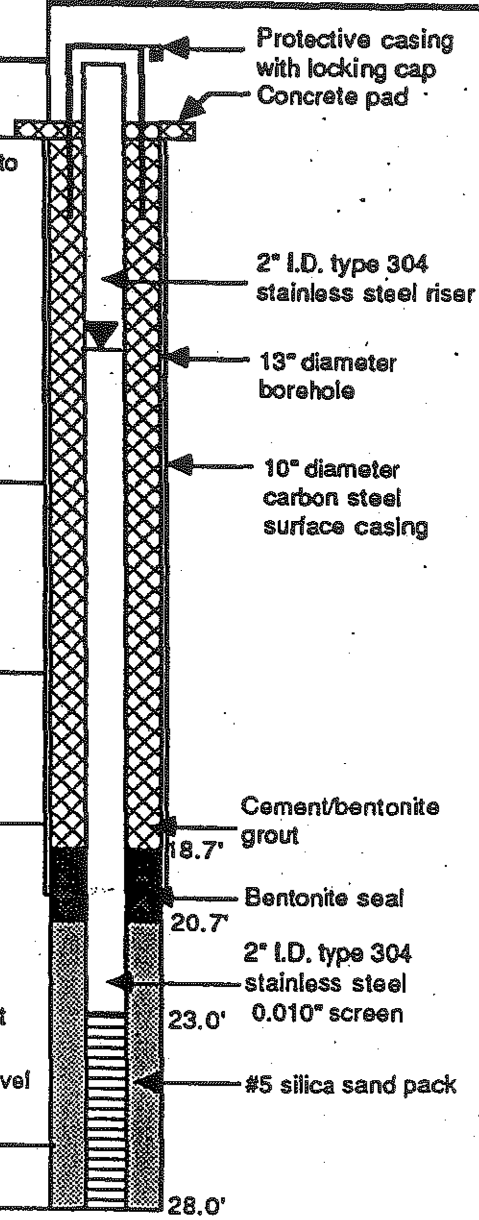
Ground Water Level Measured at 6.76 Feet Referenced to Top of Casing on 11/16/90

NA Not Applicable

Dames & Moore Job No. 03163-029-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-J2

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 887.68 feet, msl Ground Surface Elevation: 885.80 feet, msl
0						Brown fine to medium SAND, medium dense, moist to wet
5	Split Spoon Sample	14	83	<1		
10	Split Spoon Sample	18	50	<1		Gray medium to coarse SAND with gravel, medium dense, moist
15	Split Spoon Sample	35	83	<1		Gray fine to medium SAND, dense, dry to moist
	Split Spoon Sample	27	75	<1		
						Brown to dark gray silty CLAY with fine to medium SAND, dense, dry
20	Split Spoon Sample	56	58	<1		
	Split Spoon Sample	34	83	<1		grades with fine to medium gravel at 23.3 feet
25	Split Spoon Sample	32	67	<1		grades with less fine to medium gravel at 25.0 feet
	Split Spoon Sample	38	75	<1		Bluish-gray silty fine to medium SAND with trace of clay, dense to moist
30						Boring completed at 28.0 feet on 1/21/94. Monitoring well installed at 28.0 feet on 1/21/94.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

Ground Water Level Measured at 7.36 Feet, msl Referenced to Top of Casing on 2/15/94

Dames & Moore

Job No. 03163-045-121

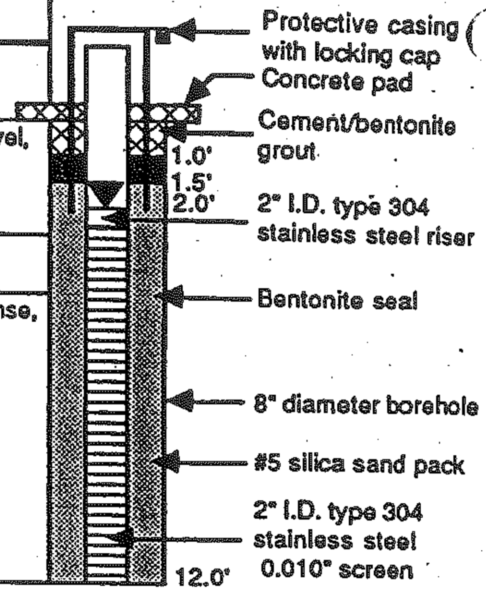
Stanley Tools

Fowlerville, Michigan

MONITORING WELL MW-J3

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 888.38 feet, msl Ground Surface Elevation: 886.20 feet, msl
0		14	75	<1		Brown fine to medium SAND with clay, silt, and gravel, medium dense, moist grades dark gray at 1.3 feet
		6	75	6.0		grades dark gray at 2.8 feet
						Brown CLAY with fine sand, medium stiff, moist
5		6	92	13.0		Gray medium to coarse SAND, loose to medium dense, wet
		9	50	4.0		
		11	75	1.5		grades coarse at 8.5 feet
10		19	83	<1		
						Boring completed at 12.0 feet on 1/11/94. Monitoring well installed at 12.0 feet on 1/11/94.
15						

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

Ground Water Level Measured at 6.69 Feet, msl Referenced to Top of Casing on 2/15/94

Dames & Moore

Job No. 03163-045-121

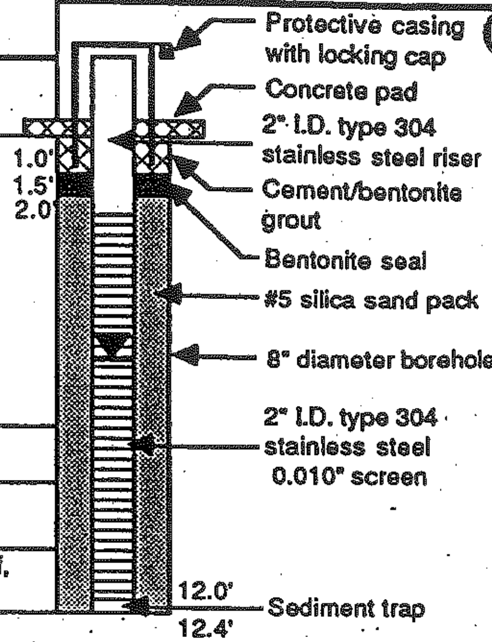
Stanley Tools

Fowlerville, Michigan

MONITORING WELL MW-J4

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 890.02 feet, msl Ground Surface Elevation: 887.78 feet, msl
0						Brown silty CLAY with fine to medium sand, medium stiff, moist
						grades dark gray with strong odor from 2.0 to 3.0 feet grades with more fine to medium sand and slight odor at 4.0 feet
5	Split spoon	6	88	1.2		
						Brown silty very fine to fine SAND with trace clay, soft, wet
10	Split spoon	11	67	<1		Gray silty fine to coarse SAND with fine to medium gravel, medium dense, wet
						Brown very fine sandy CLAY with trace gravel, stiff, moist
						Boring completed at 12.4 feet on 1/11/94. Monitoring well installed at 12.0 feet on 1/11/94.
15						

WELL CONSTRUCTION DETAIL



LEGEND:

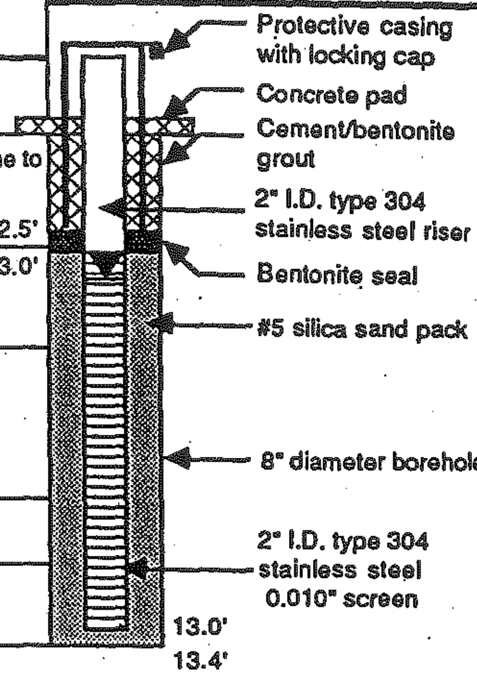
Split Spoon Sample

Ground Water Level Measured at 8.05 Feet, msl Referenced to Top of Casing on 2/15/94

Dames & Moore Job No. 03163-045-121	**Stanley Tools** Fowlerville, Michigan	**MONITORING WELL** **MW-K1**

Depth (Feet)	Sample Location	Blows/ft. Sampler	% Recovery	HNu Reading, ppm	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
						Top of Inner Casing Elevation: 891.54 feet, msl Ground Surface Elevation: 888.78 feet, msl
0						Mottled greenish-gray and brown silty CLAY with fine to medium sand, medium stiff, moist
						Gray silty fine to medium SAND with trace clay, medium dense, moist to wet
5		12	58	-		grades with more clay at 5.5 feet
						Gray very fine sandy CLAY with silt, stiff, moist
10		5	75	-		Layer of silty fine to medium SAND with trace clay, stiff, moist
						Gray very fine sandy CLAY with silt, medium stiff, moist to wet
15						Boring completed at 13.4 feet on 1/10/94. Monitoring well installed at 13.0 feet on 1/10/94.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

\- Not Recorded

▼ Ground Water Level Measured at 8.32 Feet, msl Referenced to Top of Casing on 2/15/94

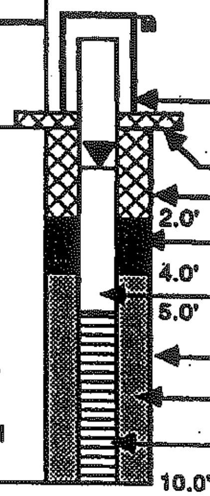
Dames & Moore
Job No. 03163-045-121

Stanley Tools
Fowlerville, Michigan

MONITORING WELL MW-L1

Depth (Feet)	Sample Location	% Recovery	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
					Top of Inner Casing Elevation: 883.02 feet, msl Ground Surface Elevation: 880.84 feet, msl
0		75	1		Brown to gray fine to medium SAND with clay, silt and humus, wet
		50	5		grades with less clay, silt and humus
5		50	4		grades with more clay and silt
		67	5		grades with less clay and silt
		75	-		grades with coarse sand and some fine gravel
10					Boring terminated at 10.0 feet on 1/28/94. Monitoring well installed at 10.0 feet on 1/28/94.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

\- Not Recorded

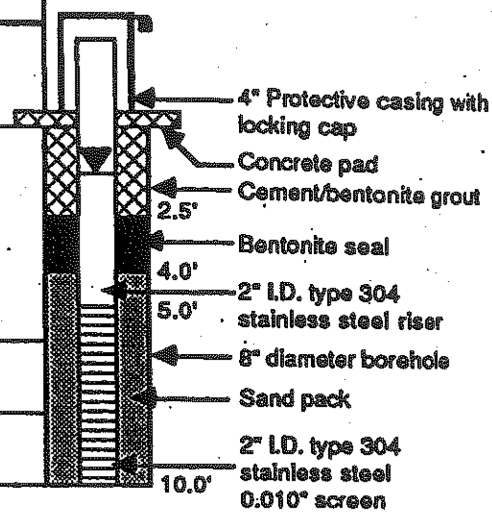
Ground Water Level Measured at 3.30 Feet, msl Referenced to Top of Casing on 2/8/94

Dames & Moore Job No. 03163-045-121	**Stanley Tools** Fowlerville, Michigan	MONITORING WELL MW-OS1

Depth (Feet)	Sample Location	% Recovery	Blows/ft. Sampler	USCS Symbol	DESCRIPTION OF SUBSURFACE MATERIALS
					Top of Inner Casing Elevation: 884.15 feet, msl Ground Surface Elevation: 881.33 feet, msl
0		75	6		Brown to gray medium SAND with clay, silt and humus grades with less clay and silt, wet
		33	1		grades to gray with more clay and silt
5		50	0		grades with less clay and silt
		50	1		Gray sandy, silty CLAY, wet
		50	0		Gray SAND, wet
10					

Boring terminated at 10.0 feet on 1/28/94.
Monitoring well installed at 10.0 feet on 1/28/94.

WELL CONSTRUCTION DETAIL



LEGEND:

Split Spoon Sample

▼ Ground Water Level Measured at 4.26 Feet, msl Referenced to Top of Casing on 2/8/94

Dames & Moore Job No. 03163-045-121	**Stanley Tools** Fowlerville, Michigan	**MONITORING WELL** **MW-OS3**

C

APPENDIX C

GEOTECHNICAL LABORATORY TEST RESULTS

geotechnics
INTEGRITY IN TESTING

LABORATORY TEST REPORT

October 23, 2003

Project No. 2003-271-01

Mr. Patrick McGuire
Earth Tech, Inc.
4135 Technology Parkway
Sheboygan, WI 53083

RE: Soils Testing - JCI FOWLERVILLE

Transmitted herein are the results of the soils testing performed for the above referenced project and verified on the Project Verification Form, submitted September 30, 2003. The testing was performed in general accordance with the ASTM methods listed on the enclosed data sheets. The remaining sample materials for this project will be retained for a minimum of 90 days as directed by the Geotechnics' Quality Program.

Disclaimer

The test results are believed to be representative of the samples submitted but are indicative only of the specimens which were evaluated. Geotechnics has no direct knowledge of the origin of the samples, implies no position with regard to the disposition of the test results, i.e. pass/fail, and makes no claims as to the suitability of the material for its intended use.

The test data and all associated project information provided shall be held in strict confidence and disclosed to other parties only with authorization of the Client and Geotechnics. The test data submitted herein is considered integral with this report and is not to be reproduced except in whole and only with the authorization of the Client and Geotechnics.

We are pleased to provide these testing services. Should you have any questions or if we may be of further assistance, please do not hesitate to contact our office.

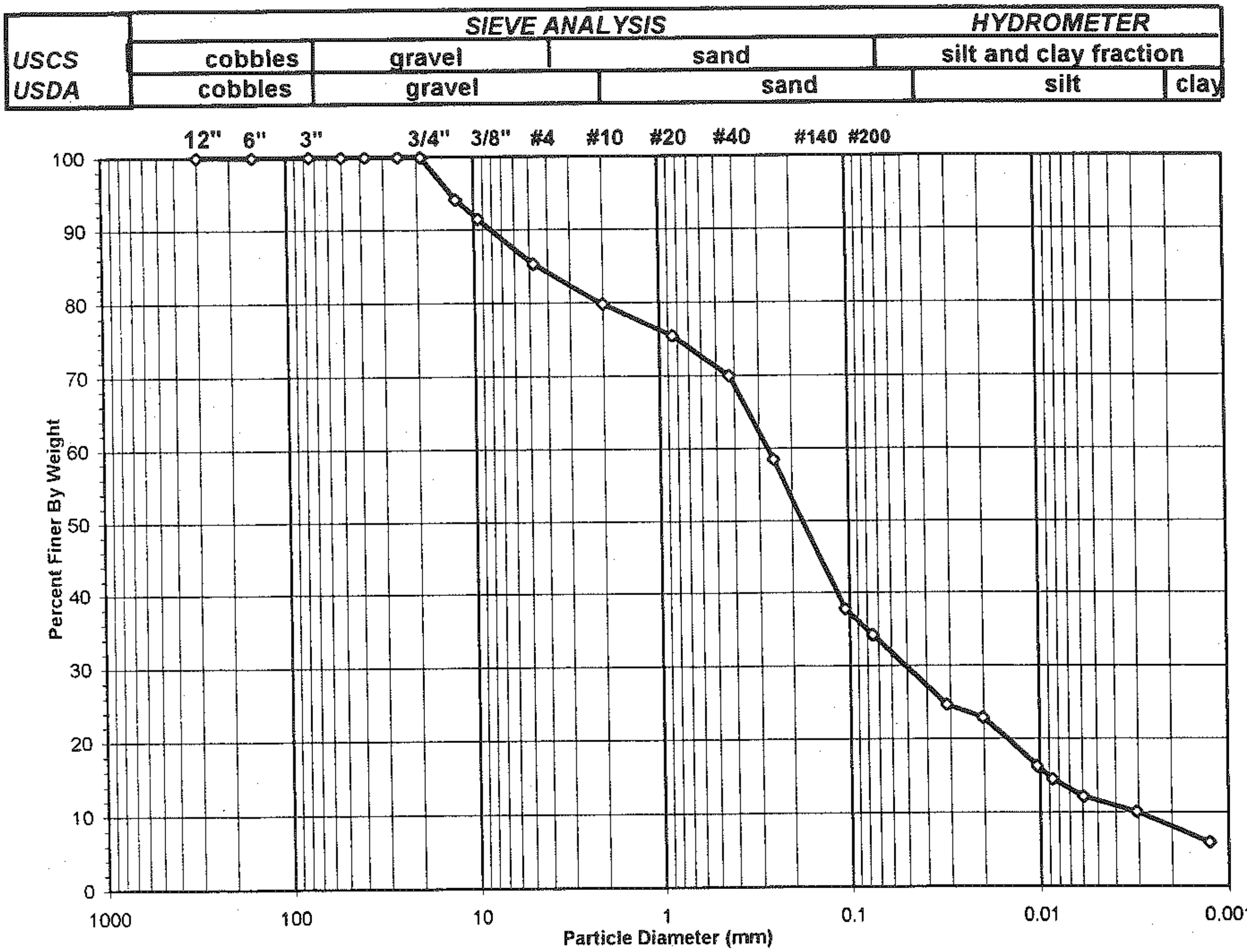
Respectively submitted,

David R. Backstrom
Laboratory Director

geotechnics
INTEGRITY IN TESTING

SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	EARTH TECH	Boring No.	MW-09B
Client Reference	JCI-FOWLERVILLE	Depth (ft)	20.0-21.5
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-01	Soil Color	GRAY



Sieve Sizes (mm)	USCS Summary	Percentage
Greater Than #4	*Gravel*	14.71
#4 To #200	*Sand*	51.10
Finer Than #200	*Silt & Clay*	34.19

USCS Symbol *SM, TESTED*

USCS Classification *SILTY SAND*

 DCN: CT-S3A DATE:1/20/03 REVISION: 5 C:\Documents and Settings\Judy\My Documents\data\[D1.XLS]Sheet1

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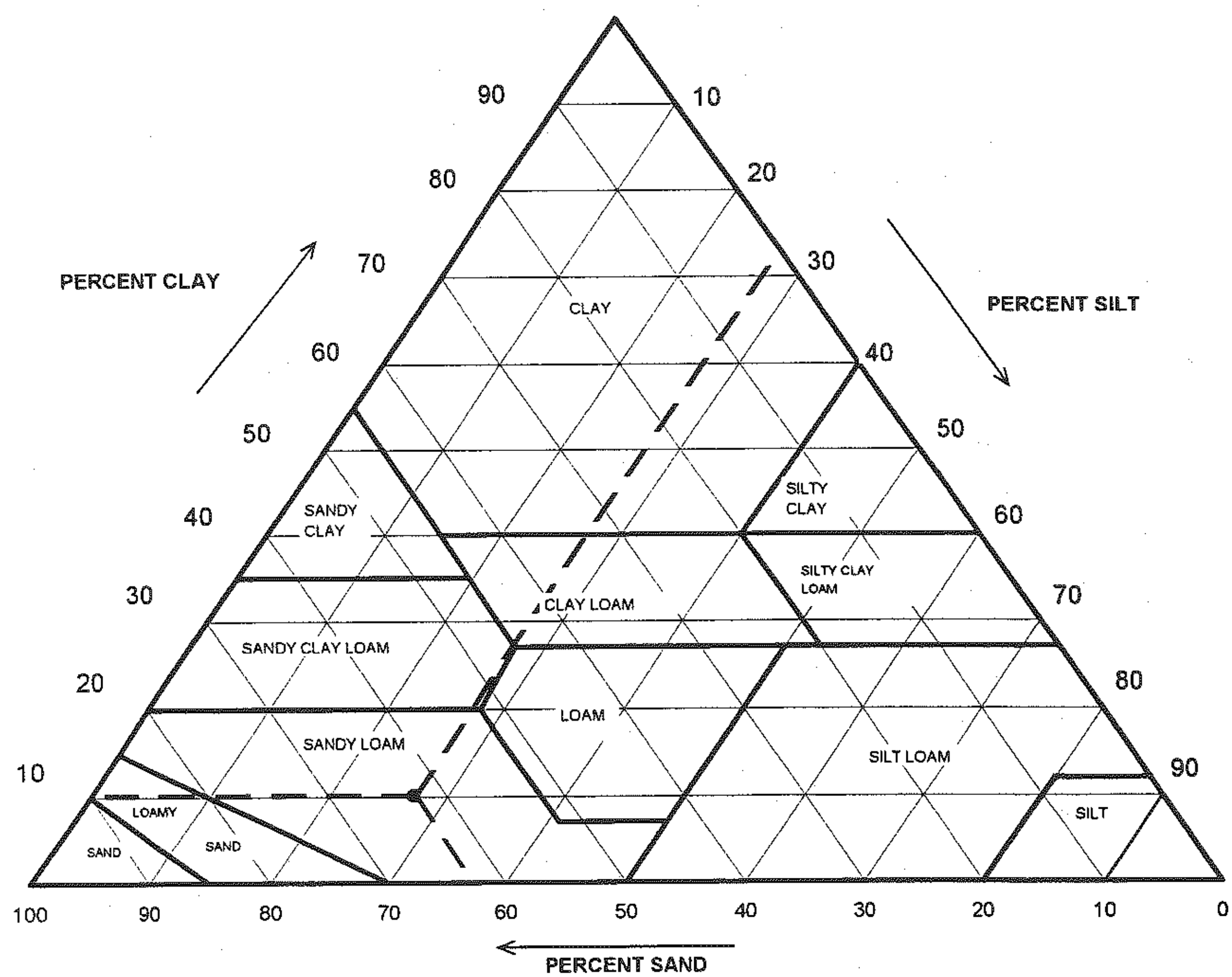
USDA CLASSIFICATION CHART

Client	EARTH TECH	Boring No.	MW-09B
Client Reference	JCI-FOWLERVILLE	Depth (ft)	20.0-21.5
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-01	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	20.19	**0.00**
2	79.81	*Sand*	50.06	**62.72**
0.05	29.76	*Silt*	21.64	**27.12**
0.002	8.11	*Clay*	8.11	**10.17**

USDA Classification: ***SANDY LOAM***

DCN: CT-S3A DATE:1/20/03 REVISION: 5

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INTEGRITY IN TESTING

WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	EARTH TECH	Boring No.	MW-09B
Client Reference	JCI-FOWLERVILLE	Depth (ft)	20.0-21.5
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-01	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	2489	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	612.00	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	567.20	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	88.00	Weight of Tare (gm)	NA
Weight of Water (gm)	44.80	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	479.20	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**9.3**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	479.20
Dry Weight - 3/4" Sample (gm)	315.35	Weight of minus #200 material (gm)	163.85
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	315.35
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	28.29	5.90	5.90	94.10	**94.10**
3/8"	9.50	12.69	2.65	8.55	91.45	**91.45**
#4	4.75	29.49	6.15	14.71	85.29	**85.29**
#10	2.00	26.28	5.48	20.19	79.81	**79.81**
#20	0.85	20.64	4.31	24.50	75.50	**75.50**
#40	0.425	26.31	5.49	29.99	70.01	**70.01**
#60	0.250	55.29	11.54	41.53	58.47	**58.47**
#140	0.106	99.06	20.67	62.20	37.80	**37.80**
#200	0.075	17.30	3.61	65.81	34.19	**34.19**
Pan	-	163.85	34.19	100.00	-	-

Tested By JP Date 10/14/03 Checked By JMD Date 10/17/03

 DCN: CT-S3A DATE:1/20/03 REVISION: 5 C:\Documents and Settings\Judy\My Documents\data\[D1.XLS]Sheet1

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INTEGRITY IN TESTING

HYDROMETER ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	EARTH TECH	Boring No.	MW-09B
Client Reference	JCI-FOWLERVILLE	Depth (ft)	20.0-21.5
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-01	Soil Color	GRAY

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	26.0	27.0	23.4	6.36	20.6	72.2	0.01291	0.0315	**24.7**
5		25.5	23.4	6.36	19.1	66.9	0.01291	0.0201	**22.9**
20		20.0	23.4	6.36	13.6	47.7	0.01291	0.0104	**16.3**
30		18.5	23.4	6.36	12.1	42.5	0.01291	0.0086	**14.5**
64		16.5	23.6	6.30	10.2	35.7	0.01288	0.0059	**12.2**
250		15.0	22.8	6.56	8.4	29.5	0.01300	0.0031	**10.1**
1538		11.5	22.9	6.53	5.0	17.4	0.01299	0.0013	**5.9**

Soil Specimen Data		Other Corrections	
Tare No.	702		
Tare + Dry Material (gm)	133.58	a - Factor	0.99
Weight of Tare (gm)	100.28		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	34.19
Weight of Dry Material (gm)	28.3		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/14/03 Checked By JMO Date 10/17/03

 DCN: CT-S3A DATE:1/20/03 REVISION: 5 *C:\Documents and Settings\Judy\My Documents\data\[D1.XLS]Sheet1*

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geotechnics
INTEGRITY IN TESTING

ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	EARTH TECH	Boring No.	MW-09B
Client Reference	JCI-FOWLERVILLE	Depth (ft)	20.0-21.5
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-01	Soil Description	**GRAY SILT**

***Note:** The USCS symbol used with this test refers only to the minus No. 40 sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.*

(Minus No. 40 sieve material, Airdried)

Liquid Limit Test	1	2	3
Tare Number	224	67	221
Wt. of Tare & WS (gm)	49.92	52.08	53.91
Wt. of Tare & DS (gm)	46.70	48.34	50.12
Wt. of Tare (gm)	19.15	18.19	20.20
Wt. of Water (gm)	3.2	3.7	3.8
Wt. of DS (gm)	27.6	30.2	29.9
Moisture Content (%)	**11.7**	**12.4**	**12.7**
Number of Blows	**33**	**22**	**16**

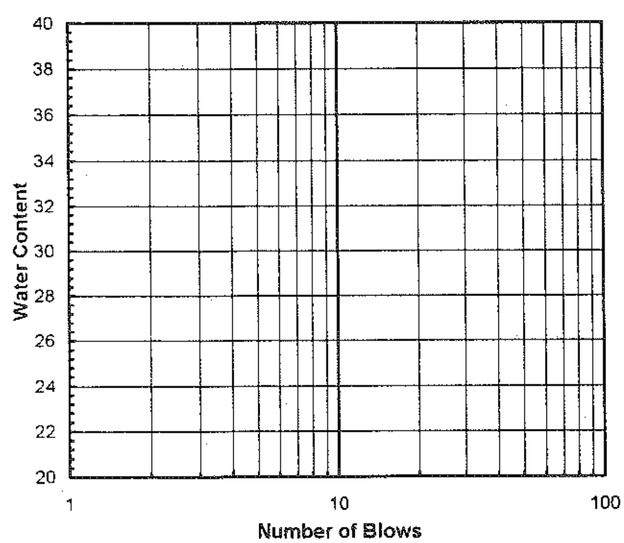
MULTIPOINT

Plastic Limit Test	1	2	Range
Tare Number	1168	157	
Wt. of Tare & WS (gm)	24.85	22.45	
Wt. of Tare & DS (gm)	24.24	21.83	
Wt. of Tare (gm)	18.57	16.26	
Wt. of Water (gm)	0.6	0.6	
Wt. of DS (gm)	5.7	5.6	
Moisture Content (%)	**10.8**	**11.1**	**-0.4**

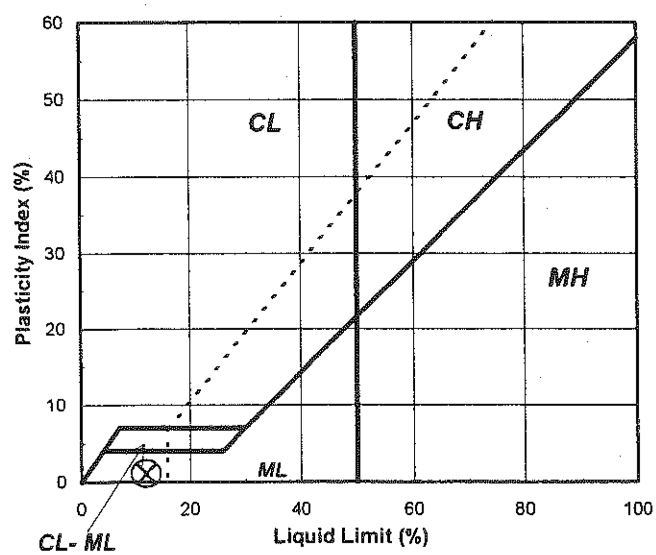
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**12**
Plastic Limit (%)	**11**
Plasticity Index (%)	**1**
USCS Symbol	**ML**

Flow Curve



Plasticity Chart



Tested By TO *Date* 10/16/03 *Checked By* RJO *Date* 10-17-03

page 1 of 1 **DCN:** CT-S4B **DATE:** 10/8/01 **REVISION:** 2

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PERMEABILITY TEST

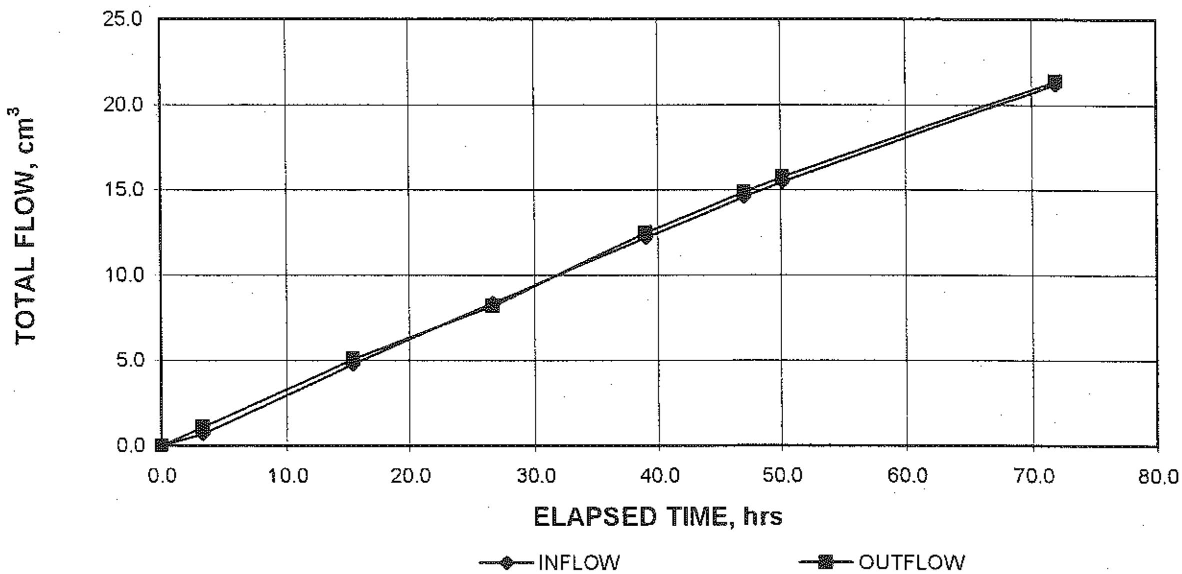
ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics
INTEGRITY IN TESTING

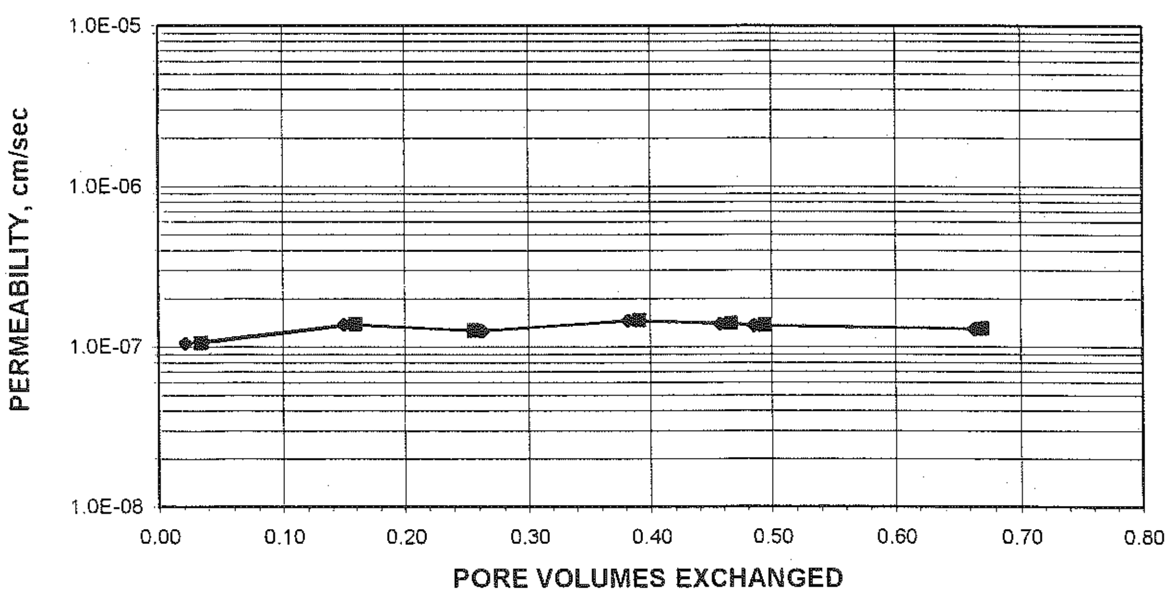
Client	EARTH TECH	Boring No.	MW-09B
Client Project	JCI - FOWLERVILLE	Depth (ft.)	20.0-21.5
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-01		

AVERAGE PERMEABILITY = 1.4E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.4E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JCM/KBL Date: 10/09/03 Checked By: Tmo Date: 10/20/03

 DCN: CT-22C DATE: 04-09-03 REVISION:4 C:\MSOFFICE\Excel\Perms\Oct2003\[271P3.XLS]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-09B
Client Project	JCI - FOWLERVILLE	Depth (ft.)	20.0-21.5
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-01		
		Specific Gravity	2.70 Assumed
		Sample Condition	Undisturbed

Visual Description: GRAY CLAY AND FINE SILTY SAND

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	608	1705
Wt. of Tare & WS (gm.)	338.65	547.70
Wt. of Tare & DS (gm.)	317.30	511.10
Wt. of Tare (gm.)	82.09	83.32
Wt. of Water (gm.)	21.35	36.60
Wt. of DS (gm.)	235.21	427.78
Moisture Content (%)	**9.1**	**8.6**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	466.70	NA
Wt. of Tube (gm.)	0.00	NA
Wt. of WS (gm.)	466.70	464.47
Length 1 (in.)	2.969	2.958
Length 2 (in.)	2.017	2.940
Length 3 (in.)	2.994	2.934
Top Diameter (in.)	2.316	2.211
Middle Diameter (in.)	2.299	2.264
Bottom Diameter (in.)	2.276	2.250
Average Length (in.)	2.66	2.94
Average Area (in.^{2})	4.14	3.95
Sample Volume (cm^3)	180.63	190.40
Unit Wet Wt. (gm./cm^3)	2.58	2.44
Unit Wet Wt. (pcf)	161.3	152.3
Unit Dry Wt. (pcf)	147.9	140.3
Unit Dry Wt. (gm./cm^3)	2.37	2.25
Void Ratio, e	0.14	0.20
Porosity, n	0.12	0.17
Pore Volume (cm^3)	22.2	31.9

Tested By: JCM/KBL Date: 10/09/03 Checked By: *jmo* Date: *10/20/03*

 DCN: CT-22C DATE: 04-09-03 REVISION:4 C:\MSOFFICE\Excel\Perms\Oct2003\[271P3.XLS]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-09B
Client Project	JCI - FOWLERVILLE	Depth (ft.)	20.0-21.5
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-01		

Pressure Heads (Constant)

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions

Sample Length (cm), L	7.48
Sample Diameter (cm)	5.69
Sample Area (cm^2), A	25.46
Inflow Burette Area (cm^2), a-in	0.875
Outflow Burette Area (cm^2), a-out	0.875
B Parameter (%)	97

AVERAGE PERMEABILITY = 1.4E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 1.4E-09 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (hr)	TOTAL INFLOW (cm^3)	TOTAL OUTFLOW (cm^3)	TOTAL HEAD h (cm)	FLOW (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
10/13/03	17	12	0.0	0.0	0.0	198.9	0	21.5	NA
10/13/03	20	33	3.4	0.7	1.1	196.9	0	21.8	1.1E-07
10/14/03	8	35	15.4	4.8	5.1	187.6	0	21.2	1.4E-07
10/14/03	19	49	26.6	8.4	8.2	180.0	0	21.8	1.3E-07
10/15/03	8	14	39.0	12.2	12.5	170.7	0	21.5	1.5E-07
10/15/03	16	16	47.1	14.6	14.9	165.3	0	21.8	1.4E-07
10/15/03	19	25	50.2	15.5	15.8	163.2	0	21.8	1.4E-07
10/16/03	17	8	71.9	21.2	21.4	150.3	1	21.8	1.3E-07

Tested By: JCM/KBL Date: 10/09/03 Checked By: TMO Date: 10/20/03

 DCN: CT-22C DATE: 04-09-03 REVISION:4 C:\MSOFFICE\Excel\Perms\Oct2003\[271P3.XLS]Sheet1

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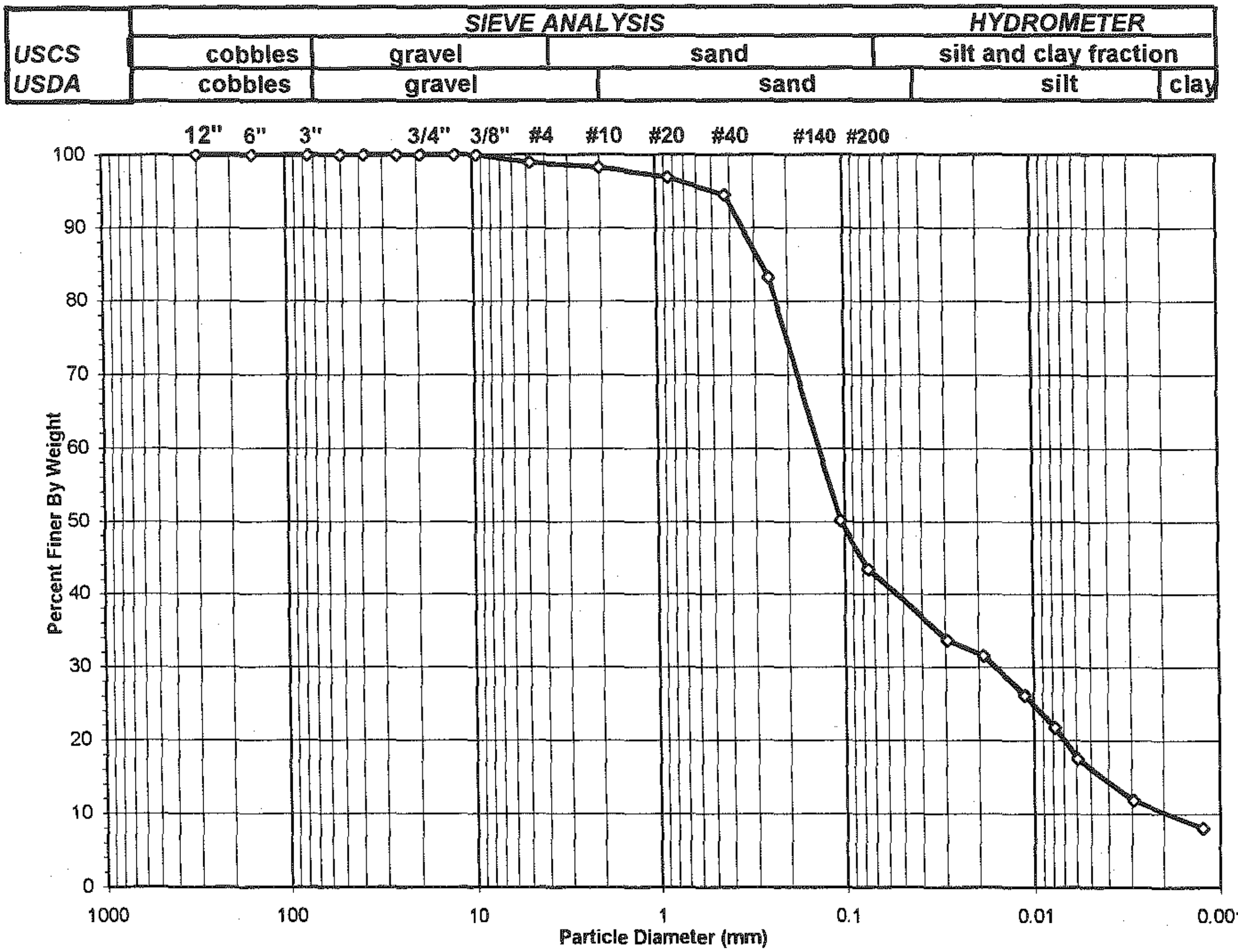
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

geotechnics
INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	14.5-15.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-02	Soil Color	**GRAY**



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	1.03
#4 To #200	*Sand*	55.51
Finer Than #200	*Silt & Clay*	43.45

USCS Symbol ***SM, TESTED***

USCS Classification ***SILTY SAND (NON-PLASTIC LIMITS)***

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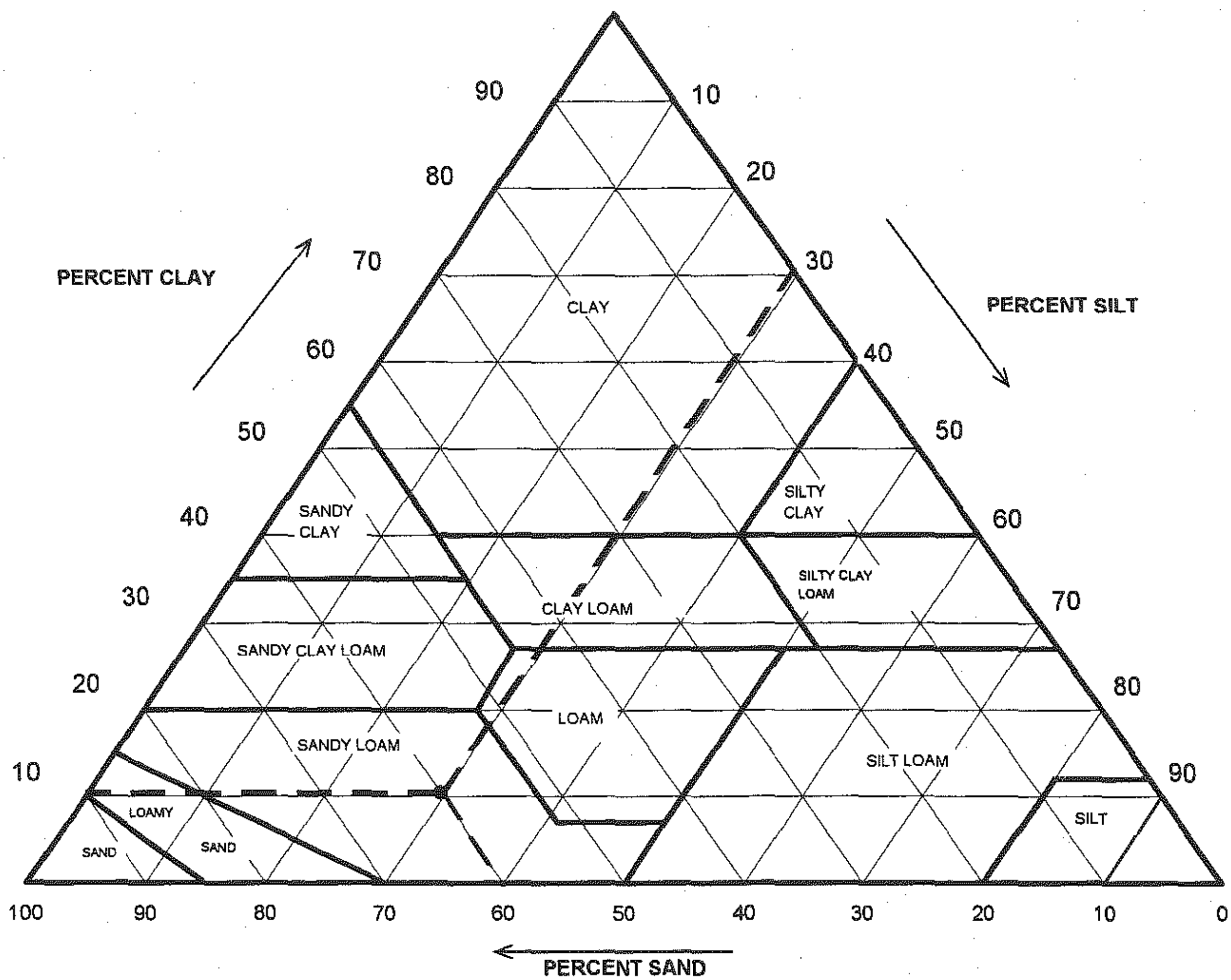
USDA CLASSIFICATION CHART

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	14.5-15.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-02	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	1.73	**0.00**
2	98.27	*Sand*	59.00	**60.03**
0.05	39.27	*Silt*	29.08	**29.59**
0.002	10.20	*Clay*	10.20	**10.38**

USDA Classification: ***SANDY LOAM***

DCN: CT-S3A DATE:1/20/03 REVISION: 5

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INTEGRITY IN TESTING

WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	14.5-15.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-02	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	658	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	382.20	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	336.85	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	97.59	Weight of Tare (gm)	NA
Weight of Water (gm)	45.35	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	239.26	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**19.0**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	239.26
Dry Weight - 3/4" Sample (gm)	135.29	Weight of minus #200 material (gm)	103.97
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	135.29
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	2.47	1.03	1.03	98.97	**98.97**
#10	2.00	1.67	0.70	1.73	98.27	**98.27**
#20	0.85	3.24	1.35	3.08	96.92	**96.92**
#40	0.425	5.79	2.42	5.50	94.50	**94.50**
#60	0.250	27.04	11.30	16.81	83.19	**83.19**
#140	0.106	79.16	33.09	49.89	50.11	**50.11**
#200	0.075	15.92	6.65	56.55	43.45	**43.45**
Pan	-	103.97	43.45	100.00	-	-

Tested By JP Date 10/14/03 Checked By Jm Date 10-20-03

 DCN: CT-S3A DATE:1/20/03 REVISION: 5 C:\Documents and Settings\Judy\My Documents\data\[D3.XLS]Sheet1

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INTEGRITY IN TESTING

HYDROMETER ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	14.5-15.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-02	Soil Color	**GRAY**

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	38.0	37.5	23.4	6.36	31.1	77.5	0.01291	0.0291	**33.7**
5		35.5	23.4	6.36	29.1	72.5	0.01291	0.0187	**31.5**
15		30.5	23.4	6.36	24.1	60.1	0.01291	0.0112	**26.1**
33		26.5	23.4	6.36	20.1	50.1	0.01291	0.0078	**21.8**
60		22.5	23.6	6.30	16.2	40.3	0.01288	0.0059	**17.5**
268		17.5	22.8	6.56	10.9	27.2	0.01300	0.0029	**11.8**
1550		14.0	22.9	6.53	7.5	18.6	0.01299	0.0012	**8.1**

Soil Specimen Data		**Other Corrections**	
Tare No.	518		
Tare + Dry Material (gm)	147.42	a - Factor	0.99
Weight of Tare (gm)	102.66		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	43.45
Weight of Dry Material (gm)	39.76		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/14/03 Checked By Jam Date 10·20·03

 DCN: CT-S3A DATE:1/20/03 REVISION: 5 *C:\Documents and Settings\Judy\My Documents\data\[D3.XLS]Sheet1*

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INTEGRITY IN TESTING

ATTERBERG LIMIT

ASTM D 4318-00/AASHTO T89-96, T90-00 (SOP - S4)

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	14.5-15.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-02	Visual Description	**GRAY SILT**
			(MInus No. 40 sieve material, Airdried)

NON - PLASTIC MATERIAL

Tested By JP *Date* 10/17/03 *Checked By* Jmo *Date* 10/20/03

 DCN: CT-S4C DATE: 7-11-97 REVISION : 2 *C:\MSOFFICE\EXCEL\PrintQ\[V521.xls]Sheet1*

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PERMEABILITY TEST

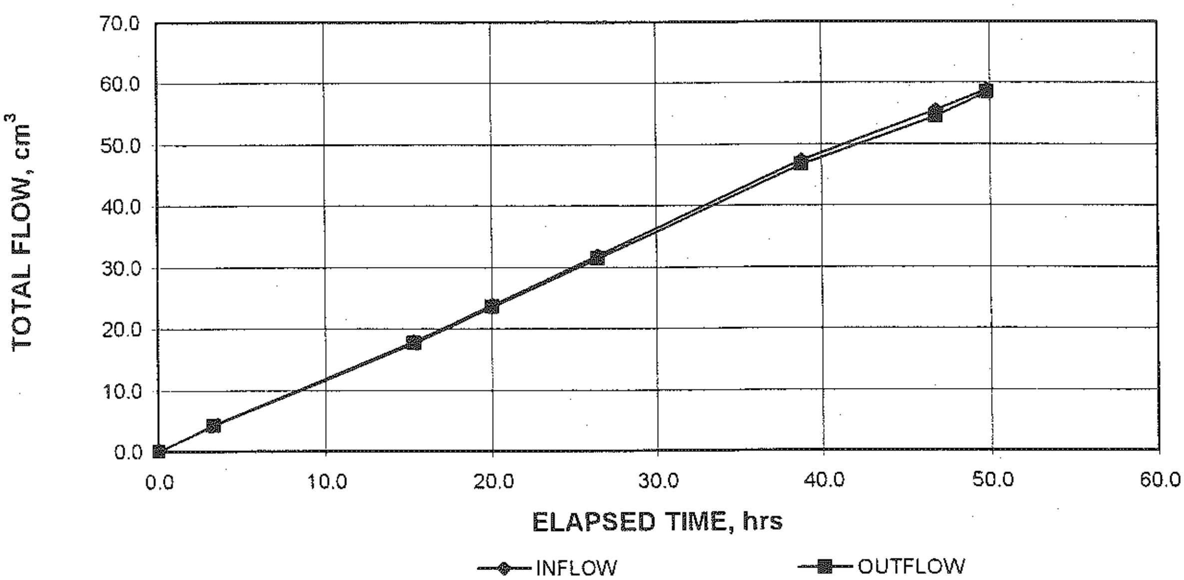
ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics
INTEGRITY IN TESTING

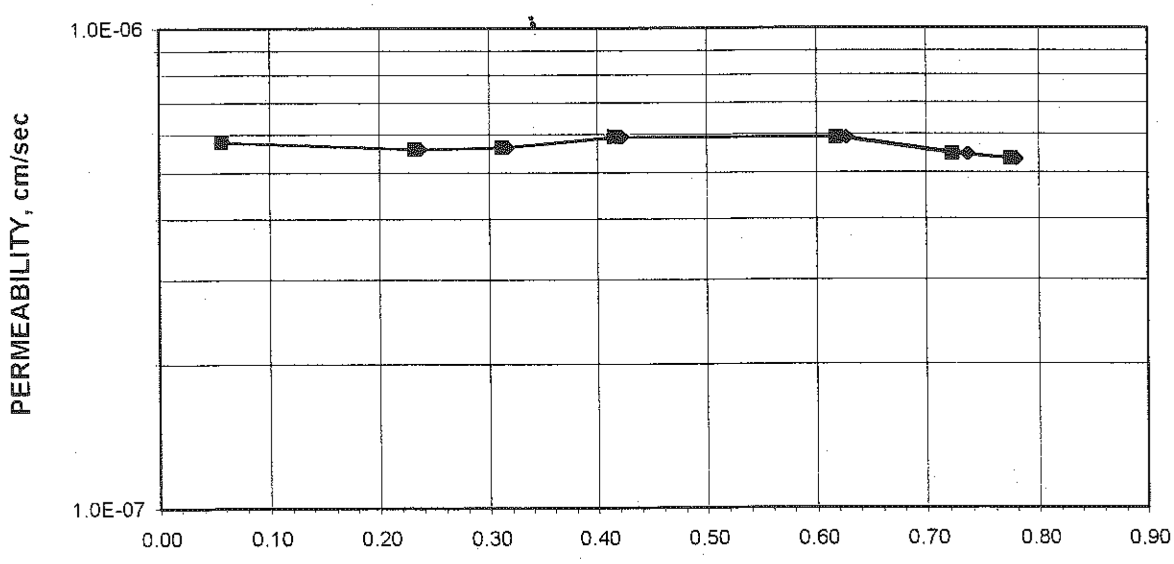
Client	EARTH TECH	Boring No.	MW-22
Client Project	JCI - FOWLERVILLE	Depth (ft.)	14.5-15.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-02		

AVERAGE PERMEABILITY = 5.7E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.7E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



Tested By: JCM/KBL Date: 10/09/03 Checked By: jmo Date: 10/20/03

 DCN: CT-22C DATE: 04-09-03 REVISION:4 C:\MSOFFICE\Excel\Perms\Oct2003\[271P1.XLS]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-22
Client Project	JCI - FOWLERVILLE	Depth (ft.)	14.5-15.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-02		
		Specific Gravity	2.70 Assumed
		Sample Condition	Undisturbed

Visual Description: GRAY SILTY SANDY CLAY

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	658	594
Wt. of Tare & WS (gm.)	382.20	269.19
Wt. of Tare & DS (gm.)	336.85	244.73
Wt. of Tare (gm.)	97.59	81.03
Wt. of Water (gm.)	45.35	24.46
Wt. of DS (gm.)	239.26	163.70
Moisture Content (%)	**19.0**	**14.9**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	531.40	NA
Wt. of Tube (gm.)	0.00	NA
Wt. of WS (gm.)	531.40	513.48
Length 1 (in.)	3.223	3.418
Length 2 (in.)	3.161	3.469
Length 3 (in.)	3.175	3.560
Top Diameter (in.)	2.462	2.221
Middle Diameter (in.)	2.444	2.320
Bottom Diameter (in.)	2.379	2.415
Average Length (in.)	3.19	3.48
Average Area (in.^{2})	4.63	4.22
Sample Volume (cm^3)	241.82	240.96
Unit Wet Wt. (gm./ cm^3)	2.20	2.13
Unit Wet Wt. (pcf)	137.2	133.0
Unit Dry Wt. (pcf)	115.3	115.7
Unit Dry Wt. (gm./ cm^3)	1.85	1.85
Void Ratio, e	0.46	0.46
Porosity, n	0.32	0.31
Pore Volume (cm^3)	76.4	75.5

Tested By: JCM/KBL Date: 10/09/03 Checked By: jmd Date: 10/20/03

DCN: CT-22C DATE: 04-09-03 REVISION:4 C:\MSOFFICE\Excel\Perms\Oct2003\[271P1.XLS]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics
INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-22
Client Project	JCI - FOWLERVILLE	Depth (ft.)	14.5-15.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-02		

Pressure Heads (Constant)

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions

Sample Length (cm), L	8.85
Sample Diameter (cm)	5.89
Sample Area (cm^2), A	27.24
Inflow Burette Area (cm^2), a-in	0.890
Outflow Burette Area (cm^2), a-out	0.889
B Parameter (%)	98

AVERAGE PERMEABILITY = 5.7E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 5.7E-09 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	TIME (min)	ELAPSED TIME t (hr)	TOTAL INFLOW (cm^3)	TOTAL OUTFLOW (cm^3)	TOTAL HEAD h (cm)	FLOW (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
10/13/03	17	12	0.0	0.0	0.0	198.0	0	21.5	NA
10/13/03	20	32	3.3	4.4	4.3	188.3	0	21.8	5.8E-07
10/14/03	8	35	15.4	17.9	17.6	158.4	1	21.2	5.6E-07
10/14/03	8	40	15.4	17.9	17.6	200.5	0	21.2	NA
10/14/03	13	20	20.1	23.9	23.5	187.2	0	21.8	5.6E-07
10/14/03	19	47	26.5	31.9	31.4	169.4	1	21.8	5.9E-07
10/14/03	19	54	26.5	31.9	31.4	200.3	0	21.8	NA
10/15/03	8	12	38.8	47.4	46.7	166.0	0	21.5	5.9E-07
10/15/03	16	15	46.9	55.6	54.6	148.0	1	21.8	5.5E-07
10/15/03	16	26	46.9	55.6	54.6	200.4	0	21.8	NA
10/15/03	19	23	49.8	58.9	58.5	192.3	1	21.8	5.3E-07

Tested By: JCM/KBL Date: 10/09/03 Checked By: Jmo Date: 10/20/03

 DCN: CT-22C DATE: 04-09-03 REVISION:4 C:\MSOFFICE\Excel\Perms\Oct2003\[271P1.XLS]Sheet1

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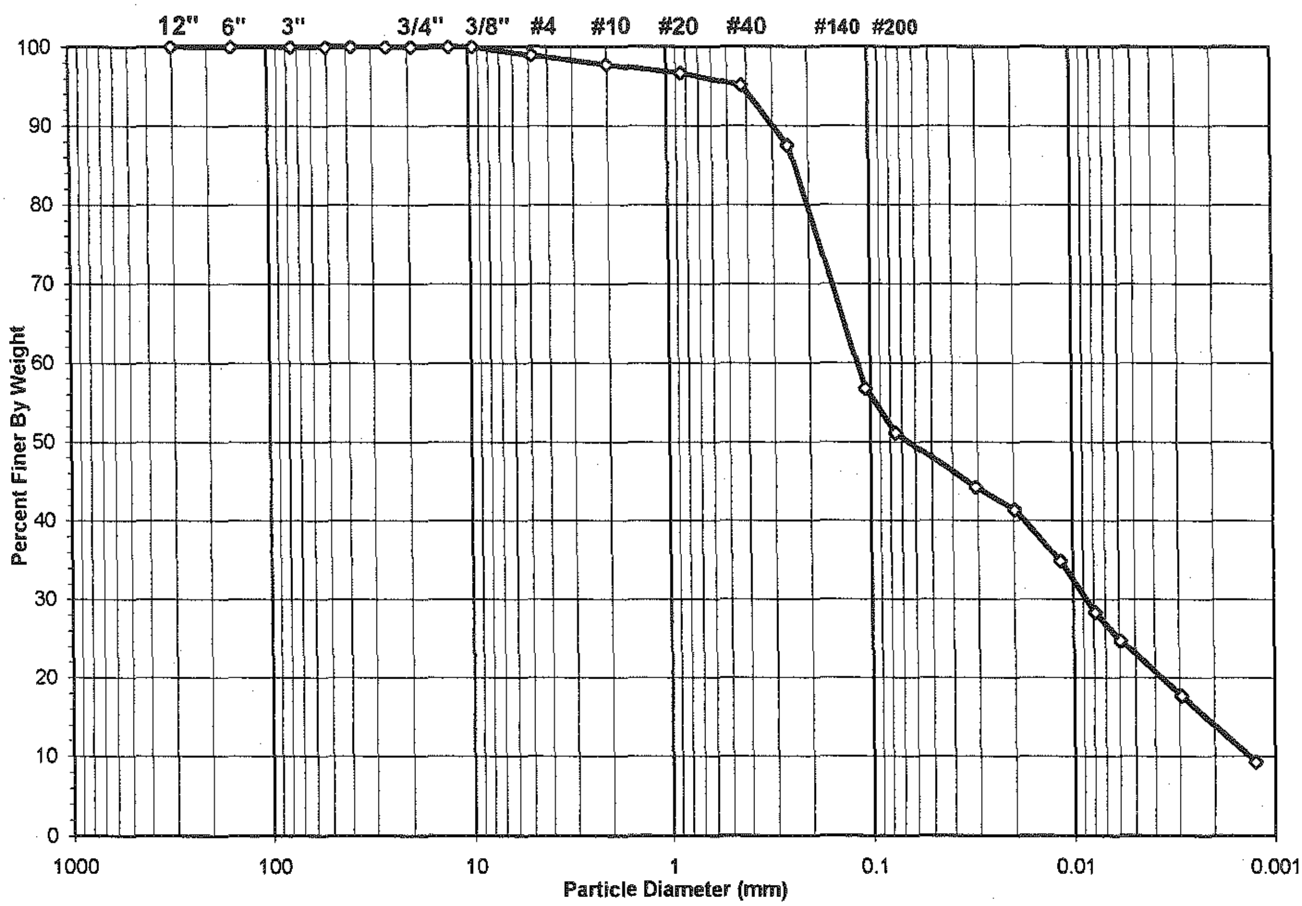
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	16.5-17.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-03	Soil Color	**GRAY**

	SIEVE ANALYSIS			HYDROMETER	
USCS	cobbles	gravel	sand	silt and clay fraction	
USDA	cobbles	gravel	sand	silt	clay



USCS Summary		
Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	1.05
#4 To #200	*Sand*	47.84
Finer Than #200	*Silt & Clay*	51.11

USCS Symbol *CL, TESTED*

USCS Classification *SANDY LEAN CLAY*

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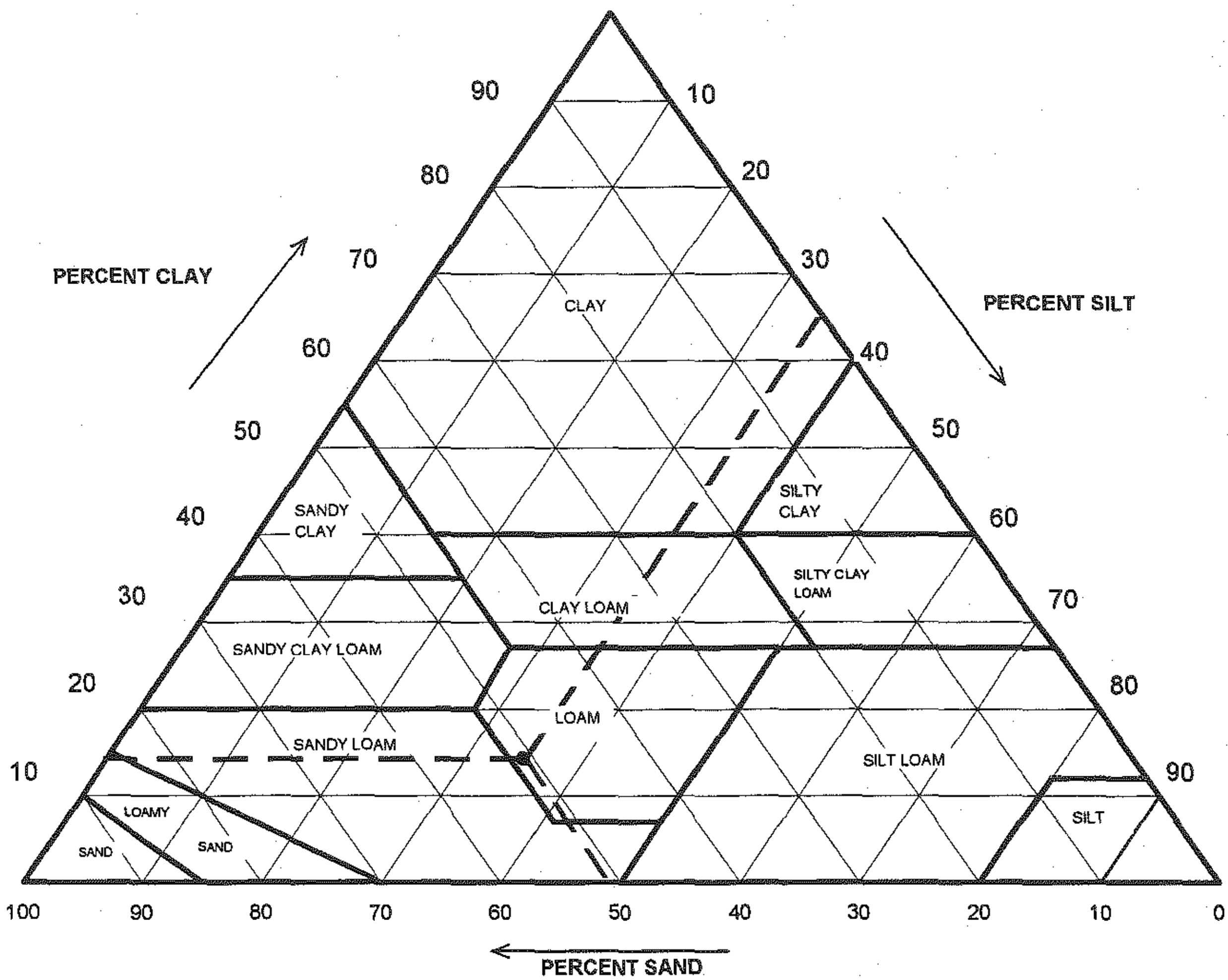
USDA CLASSIFICATION CHART

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	16.5-17.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-03	Soil Color	GRAY



Particle Size (mm)	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
		Gravel	2.28	**0.00**
2	97.72	*Sand*	49.75	**50.91**
0.05	47.97	*Silt*	34.04	**34.84**
0.002	13.92	*Clay*	13.92	**14.25**

USDA Classification: ***LOAM***

 DCN: CT-S3A DATE:1/20/03 REVISION: 5 *C:\Documents and Settings\Judy\My Documents\data\[D3.XLS]Sheet1*

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WASH SIEVE ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

geotechnics INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	16.5-17.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-03	Soil Color	**GRAY**

Moisture Content of Passing 3/4" Material		Water Content of Retained 3/4" Material	
Tare No.	2341	Tare No.	NA
Wgt.Tare + Wet Specimen (gm)	283.61	Wgt.Tare + Wet Specimen (gm)	NA
Wgt.Tare + Dry Specimen (gm)	253.78	Wgt.Tare + Dry Specimen (gm)	NA
Weight of Tare (gm)	98.38	Weight of Tare (gm)	NA
Weight of Water (gm)	29.83	Weight of Water (gm)	NA
Weight of Dry Soil (gm)	155.40	Weight of Dry Soil (gm)	NA
Moisture Content (%)	**19.2**	**Moisture Content (%)**	**NA**

Wet Weight -3/4" Sample (gm)	NA	Weight of the Dry Specimen (gm)	155.40
Dry Weight - 3/4" Sample (gm)	75.98	Weight of minus #200 material (gm)	79.42
Wet Weight +3/4" Sample (gm)	NA	Weight of plus #200 material (gm)	75.98
Dry Weight + 3/4" Sample (gm)	0.00		
Total Dry Weight Sample (gm)	NA		

Sieve Size	Sieve Opening (mm)	Wgt.of Soil Retained (gm)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	**Accumulated Percent Finer (%)**
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	1.63	1.05	1.05	98.95	**98.95**
#10	2.00	1.92	1.24	2.28	97.72	**97.72**
#20	0.85	1.65	1.06	3.35	96.65	**96.65**
#40	0.425	2.31	1.49	4.83	95.17	**95.17**
#60	0.250	11.92	7.67	12.50	87.50	**87.50**
#140	0.106	47.84	30.79	43.29	56.71	**56.71**
#200	0.075	8.71	5.60	48.89	51.11	**51.11**
Pan	-	79.42	51.11	100.00	-	-

Tested By JP Date 10/14/03 Checked By Jem Date 10-20-03

 DCN: CT-S3A DATE:1/20/03 REVISION: 5 C:\Documents and Settings\Judy\My Documents\data\[D3.XLS]Sheet1

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HYDROMETER ANALYSIS

ASTM D 422-63/AASHTO T88-00 (SOP-S3)

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	16.5-17.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-03	Soil Color	GRAY

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	30.0	30.0	23.4	6.36	23.6	86.5	0.01291	0.0308	**44.2**
5		28.5	23.4	6.36	22.1	81.0	0.01291	0.0197	**41.4**
15		25.0	23.4	6.36	18.6	68.2	0.01291	0.0116	**34.9**
35		21.5	23.4	6.36	15.1	55.4	0.01291	0.0078	**28.3**
63		19.5	23.6	6.30	13.2	48.3	0.01288	0.0059	**24.7**
271		16.0	22.8	6.56	9.4	34.5	0.01300	0.0029	**17.7**
1553		11.5	22.9	6.53	5.0	18.2	0.01299	0.0013	**9.3**

Soil Specimen Data		Other Corrections	
Tare No.	1075		
Tare + Dry Material (gm)	130.55	a - Factor	0.99
Weight of Tare (gm)	98.5		
Weight of Deflocculant (gm)	5.0	Percent Finer than # 200	51.11
Weight of Dry Material (gm)	27.05		
		Specific Gravity	2.7 Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/14/03 Checked By Jom Date 10·20·03

 DCN: CT-S3A DATE:1/20/03 REVISION: 5 *C:\Documents and Settings\Judy\My Documents\data\[D3.XLS]Sheet1*

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ATTERBERG LIMITS

ASTM D 4318-98 / AASHTO T89 (SOP - S4A)

Client	EARTH TECH	Boring No.	MW-22
Client Reference	JCI-FOWLERVILLE	Depth (ft)	16.5-17.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID	2003-271-01-03	Soil Description	**GRAY LEAN CLAY**

Note: The USCS symbol used with this test refers only to the minus No. 40 (Minus No. 40 sieve material, Airdried)
sieve material. See the "Sieve and Hydrometer Analysis" graph page for the complete material description.

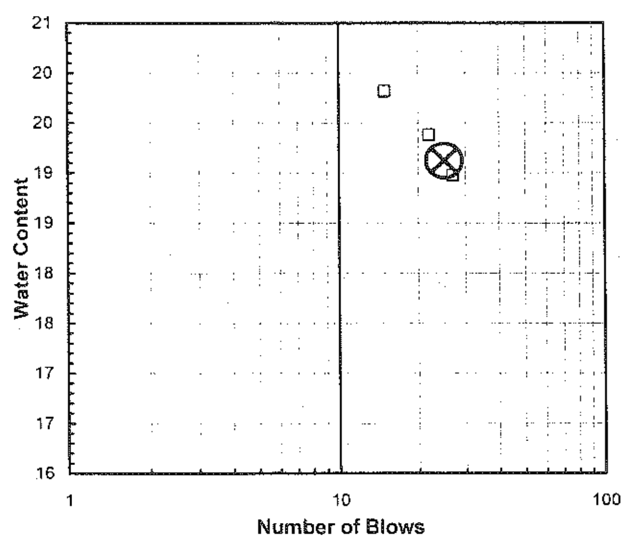
Liquid Limit Test	1	2	3	MULTIPOINT
Tare Number	2288	2253	2289	
Wt. of Tare & WS (gm)	42.49	40.52	42.74	
Wt. of Tare & DS (gm)	38.80	37.05	39.05	
Wt. of Tare (gm)	19.35	19.14	20.43	
Wt. of Water (gm)	3.7	3.5	3.7	
Wt. of DS (gm)	19.5	17.9	18.6	
Moisture Content (%)	**19.0**	**19.4**	**19.8**	
Number of Blows	**27**	**22**	**15**	

Plastic Limit Test	1	2	Range
Tare Number	35	218	
Wt. of Tare & WS (gm)	23.54	26.42	
Wt. of Tare & DS (gm)	22.89	25.79	
Wt. of Tare (gm)	17.23	20.07	
Wt. of Water (gm)	0.6	0.6	
Wt. of DS (gm)	5.7	5.7	
Moisture Content (%)	**11.5**	**11.0**	**0.5**

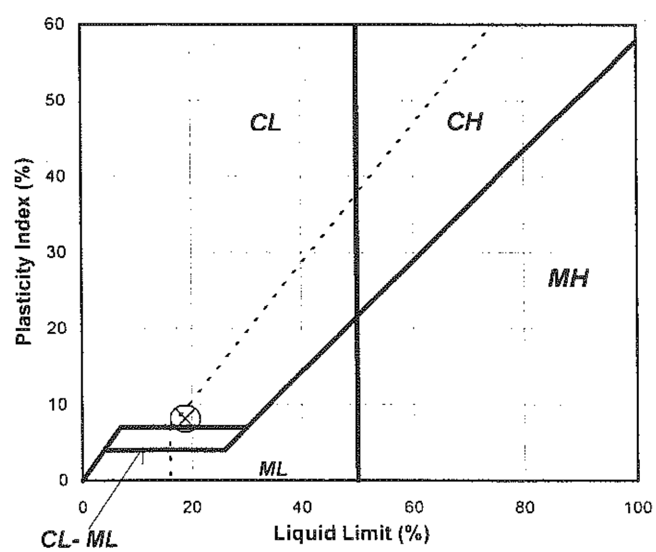
Note: The acceptable range of the two Moisture contents is ± 2.6

Test Results	
Liquid Limit (%)	**19**
Plastic Limit (%)	**11**
Plasticity Index (%)	**8**
USCS Symbol	**CL**

Flow Curve



Plasticity Chart



Tested By *JP* *Date* *10/17/03* *Checked By* lmo *Date* 10/20/03

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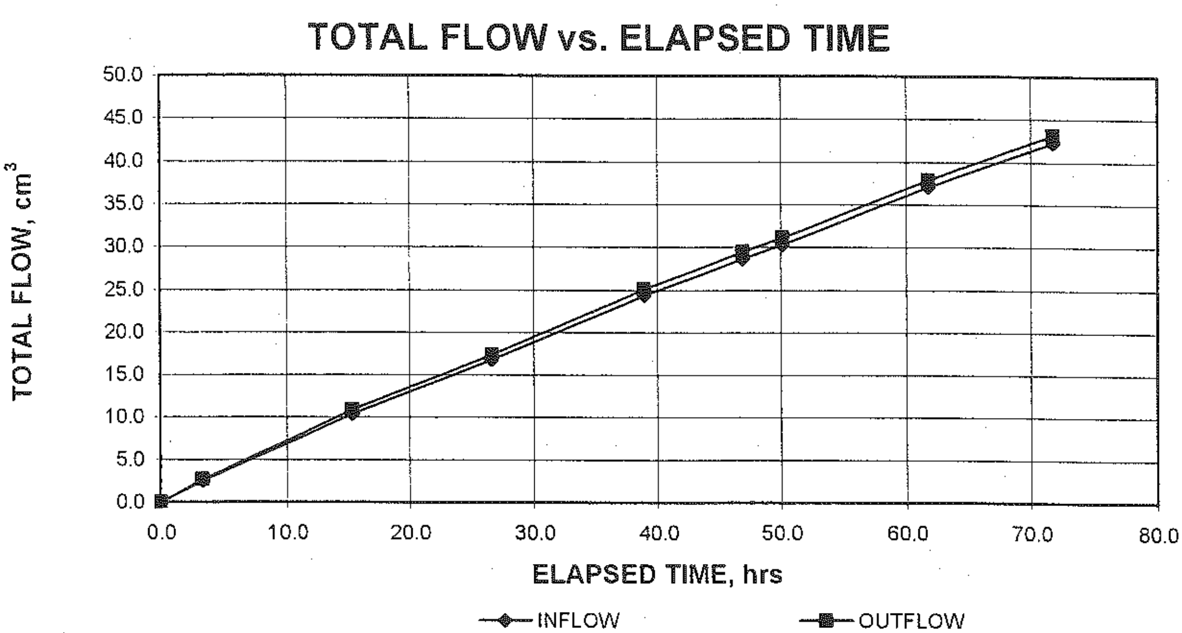
PERMEABILITY TEST

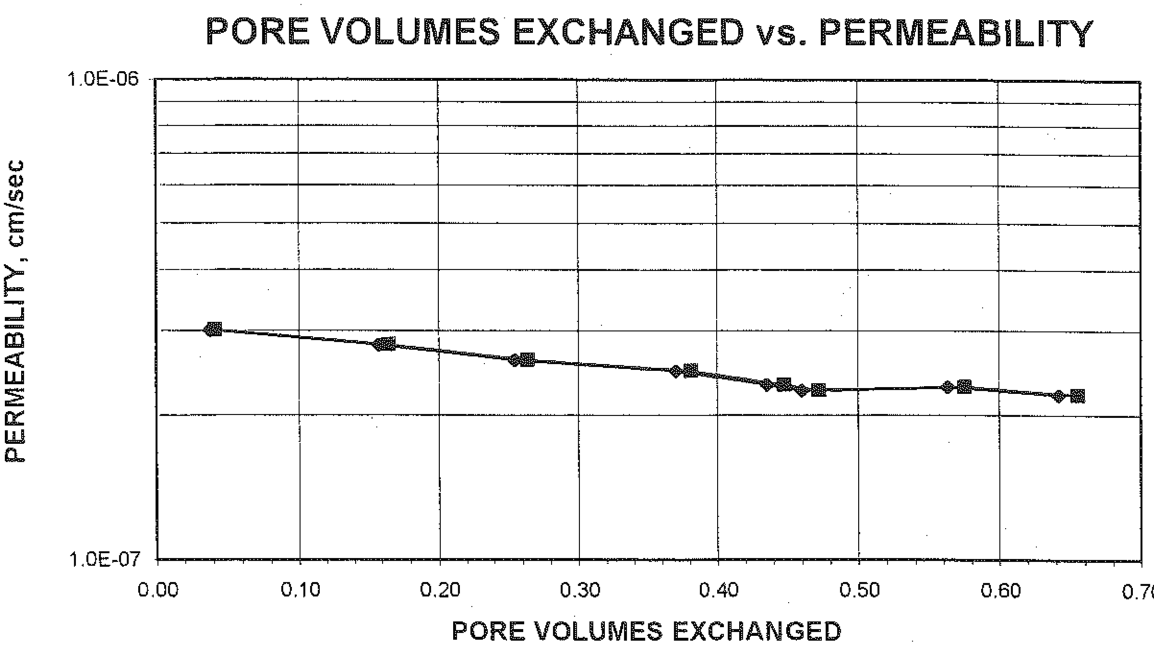
ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics
INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-22
Client Project	JCI - FOWLERVILLE	Depth (ft.)	16.5-17.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-03		

AVERAGE PERMEABILITY = 2.3E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 2.3E-09 m/sec @ 20°C





Tested By: JCM/KBL Date: 10/09/03 Checked By: JMC Date: 10/20/03

DCN: CT-22C DATE: 04-09-03 REVISION:4 C:\MSOFFICE\Excel\Perms\Oct2003\[271P2.XLS]Sheet1

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

geotechnics INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-22
Client Project	JCI - FOWLERVILLE	Depth (ft.)	16.5-17.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-03		
		Specific Gravity	2.70 Assumed
		Sample Condition	Undisturbed

Visual Description: GRAY CLAY

MOISTURE CONTENT:	BEFORE TEST	AFTER TEST
Tare Number	2341	565
Wt. of Tare & WS (gm.)	283.61	192.01
Wt. of Tare & DS (gm.)	253.78	175.59
Wt. of Tare (gm.)	98.38	83.11
Wt. of Water (gm.)	29.83	16.42
Wt. of DS (gm.)	155.40	92.48
Moisture Content (%)	**19.2**	**17.8**

SPECIMEN:	BEFORE TEST	AFTER TEST
Wt. of Tube & WS (gm.)	459.90	NA
Wt. of Tube (gm.)	0.00	NA
Wt. of WS (gm.)	459.90	454.34
Length 1 (in.)	2.955	3.063
Length 2 (in.)	2.994	3.034
Length 3 (in.)	2.952	3.020
Top Diameter (in.)	2.393	2.318
Middle Diameter (in.)	2.374	2.307
Bottom Diameter (in.)	2.388	2.306
Average Length (in.)	2.97	3.04
Average Area (in.^{2})	4.47	4.19
Sample Volume (cm^3)	217.21	208.77
Unit Wet Wt. (gm./ cm^3)	2.12	2.18
Unit Wet Wt. (pcf)	132.2	135.8
Unit Dry Wt. (pcf)	110.9	115.4
Unit Dry Wt. (gm./ cm^3)	1.78	1.85
Void Ratio, e	0.52	0.46
Porosity, n	0.34	0.32
Pore Volume (cm^3)	74.3	65.9

Tested By: JCM/KBL Date: 10/09/03 Checked By: Tmo Date: 10/20/03

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PERMEABILITY TEST

ASTM D 5084-90(Reapproved 1997)
(SOP-S22A & S22B)

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INTEGRITY IN TESTING

Client	EARTH TECH	Boring No.	MW-22
Client Project	JCI - FOWLERVILLE	Depth (ft.)	16.5-17.0
Project No.	2003-271-01	Sample No.	ST-1
Lab ID No.	2003-271-01-03		

Pressure Heads (Constant)

Top Cap (psi)	67.5
Bottom Cap (psi)	70.0
Cell (psi)	75.0
Total Pressure Head (cm)	175.8

Final Sample Dimensions

Sample Length (cm), L	7.72
Sample Diameter (cm)	5.87
Sample Area (cm^2), A	27.05
Inflow Burette Area (cm^2), a-in	0.876
Outflow Burette Area (cm^2), a-out	0.884
B Parameter (%)	95

AVERAGE PERMEABILITY = 2.3E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 2.3E-09 m/sec @ 20°C

DATE (mm/dd/yy)	TIME (hr)	(min)	ELAPSED TIME t (hr)	TOTAL INFLOW (cm^3)	TOTAL OUTFLOW (cm^3)	TOTAL HEAD h (cm)	FLOW (0 flow) (1 stop)	TEMP. (°C)	INCREMENTAL PERMEABILITY @ 20°C (cm/sec)
10/13/03	17	12	0.0	0.0	0.0	198.6	0	21.5	NA
10/13/03	20	33	3.4	2.5	2.7	192.7	0	21.8	3.0E-07
10/14/03	8	35	15.4	10.4	10.9	174.5	0	21.2	2.8E-07
10/14/03	19	49	26.6	16.8	17.4	159.9	1	21.8	2.6E-07
10/14/03	19	54	26.6	16.8	17.4	199.7	0	21.8	NA
10/15/03	8	14	39.0	24.4	25.1	182.4	0	21.5	2.5E-07
10/15/03	16	16	47.0	28.7	29.5	172.5	0	21.8	2.3E-07
10/15/03	19	25	50.1	30.3	31.1	168.9	1	21.8	2.3E-07
10/15/03	19	29	50.1	30.3	31.1	201.8	0	21.8	NA
10/16/03	7	8	61.8	37.1	37.9	186.4	0	21.5	2.3E-07
10/16/03	17	8	71.8	42.3	43.2	174.5	1	21.8	2.2E-07

Tested By: JCM/KBL Date: 10/09/03 Checked By: jmo Date: 10/20/03

DCN: CT-22C DATE: 04-09-03 REVISION:4
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D

APPENDIX D

HYDROGEOLOGIC DATA AND ANALYSIS

APPENDIX D

HYDROGEOLOGIC DATA AND ANALYSIS

Appendix

APPENDIX D-1

GROUNDWATER HORIZONTAL HYDRAULIC GRADIENT AND AVERAGE LINEAR VELOCITY CALCULATIONS

CLIENT JCI	**SUBJECT** Horizontal Hydraulic Gradient and	**Prepared By** ____ **Date** ____
PROJECT Fowlerville	the Average Linear Velocity Calculations	**Reviewed By** ____ **Date** ____
		Approved By ____ **Date** ____

Objective: Calculate the horizontal hydraulic gradient and the average linear velocity for the shallow and deep wells for the JCI-Fowlerville Site in Michigan.

Criteria, Assumptions, and Calculations:

- Water elevations were measured on December 18, 2003.
- The horizontal gradients are estimated from the Shallow Well Piezometric Contour Map, December 18, 2003, and Deep Well Piezometric Contour Map, December 18, 2003.
- Horizontal gradients are calculated along flow lines from the December 18, 2003, water level measurements.
- The geometric mean of the hydraulic conductivities was calculated from the slug test results for the Shallow and Deep Wells from previous investigations (Resource Conservation and Recovery Act Facility Investigation, URS, October 2001 (Table 4-3, 4-4, and 4-5), and recent November 2003 slug tests.
- Assumed porosity of 0.3 for sands and gravels for the shallow wells (range 0.25 to 0.5) and assumed porosity of 0.2 for sandstone, limestone, and shale for the deep wells (range 0 to 0.3) (Freeze and Cherry, 1979, GROUNDWATER).

Horizontal Gradient:

Where: $I_h = \Delta h_h / \Delta l_h$

I_h = Horizontal Gradient

Δh_h = Change in water elevation along the flow line

Δl_h = Length (distance) along the flow line between the minimum and maximum water elevation contours

Horizontal Flow Velocity (Average Linear Velocity):

$$V = K I_h / n_e$$

Where: V = Average linear Velocity

K = Geometric mean of the Hydraulic Conductivity (Shallow = 1.1×10^{-3} cm/sec, 3.2 ft/day. Deep = 4.8×10^{-4} cm/sec, 1.3 ft/day)

I_h = Horizontal Gradient

n_e = Effective porosity (Shallow = 0.3, Deep = 0.2)

	Change in Water Elevation (feet)	Distance Along Flow line (feet)	Horizontal Gradient (unitless)	Horizontal Flow Velocity (ft/day)
Shallow Wells (flow line east of the river)	(882-880) = 2	250	0.008	0.09
Shallow Wells (flow line west of the river)	(882-879) = 3	460	0.007	0.07
Bedrock/Deep Wells (flow line east of the river)	(882-880) = 2	220	0.009	0.06
Bedrock/Deep Wells (flow line west of the river)	(882-880) = 2	375	0.005	0.03

The average linear velocity for the shallow flow line east of the river is 0.09 ft/day.
The average linear velocity for the shallow flow line west of the river is 0.07 ft/day.

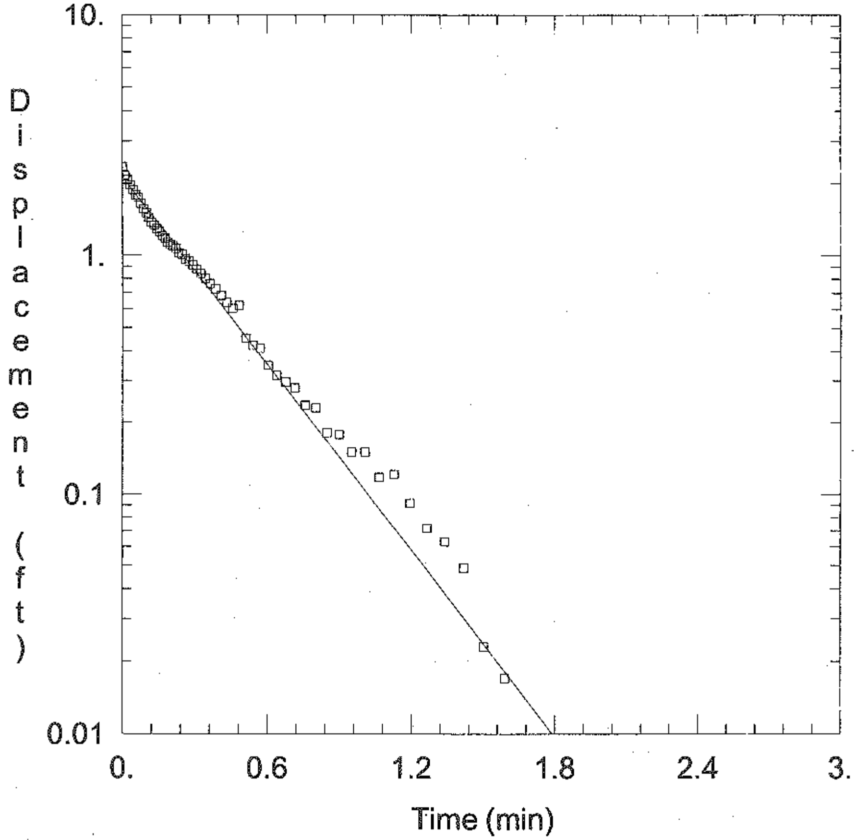
CALCULATION SHEET

CLIENT JCI	SUBJECT Horizontal Hydraulic Gradient and	Prepared By ____	Date ____
PROJECT Fowlerville	the Average Linear Velocity Calculations	Reviewed By ____	Date ____
		Approved By ____	Date ____

The average linear velocity for the deep flow line east of the river is 0.06 ft/day.
The average linear velocity for the deep flow line west of the river is 0.03 ft/day.

APPENDIX D-2

IN-SITU TEST RESULTS



MW-03 RISING TEST #1

Data Set: L:\...\MW03R1.AQT
Date: 11/12/03 Time: 08:43:42

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-03
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.003957 cm/sec
y0 = 2.109 ft

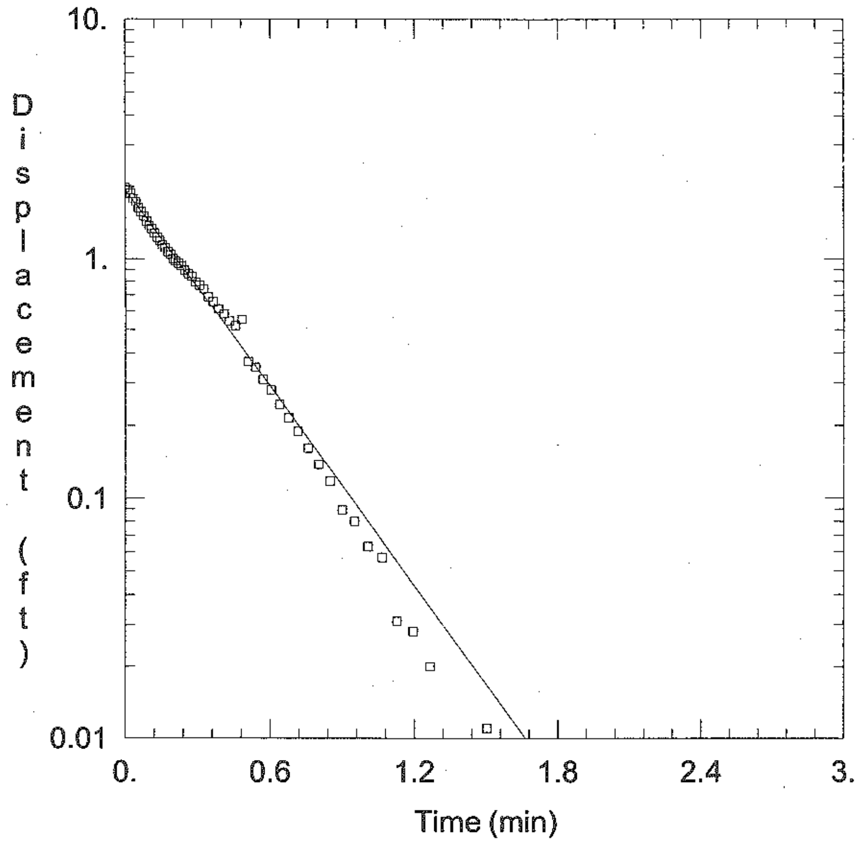
AQUIFER DATA

Saturated Thickness: 13.43 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-03)

Initial Displacement: 2.338 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 13.43 ft



MW-03 RISING TEST #2

Data Set: L:\...\MW03R2.AQT
Date: 11/12/03 Time: 08:43:48

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-03
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

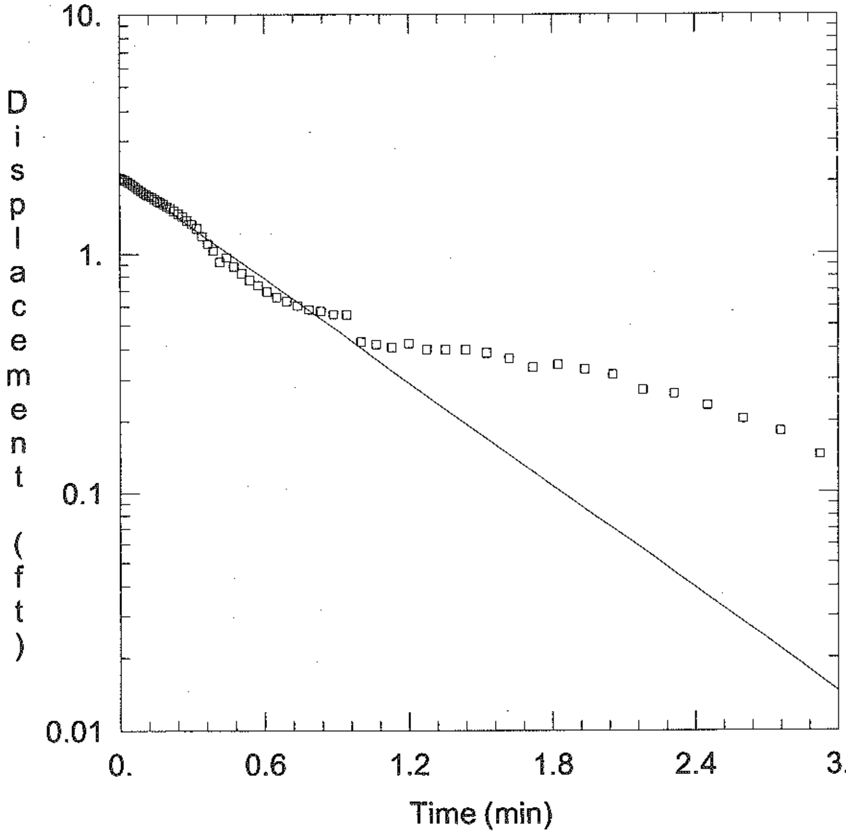
K = 0.004191 cm/sec
y0 = 1.942 ft

AQUIFER DATA

Saturated Thickness: 13.43 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-03)

Initial Displacement: 1.978 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 13.43 ft



MW-03 FALLING TEST #1

Data Set: L:\...\MW03F1.AQT
Date: 11/12/03 Time: 08:44:10

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-03
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.002197 cm/sec
y0 = 2.119 ft

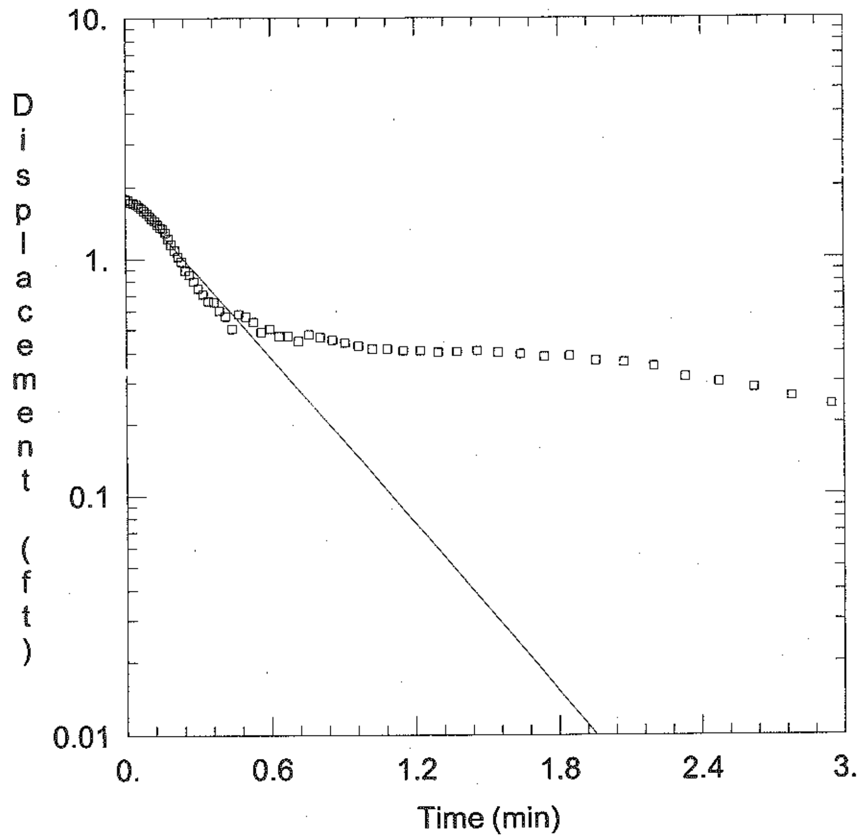
AQUIFER DATA

Saturated Thickness: 13.43 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-03)

Initial Displacement: 2.08 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 13.43 ft



MW-03 FALLING TEST #2

Data Set: L:\...\MW03F2.AQT
Date: 11/12/03 Time: 08:44:17

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-03
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.003545 cm/sec
y0 = 1.891 ft

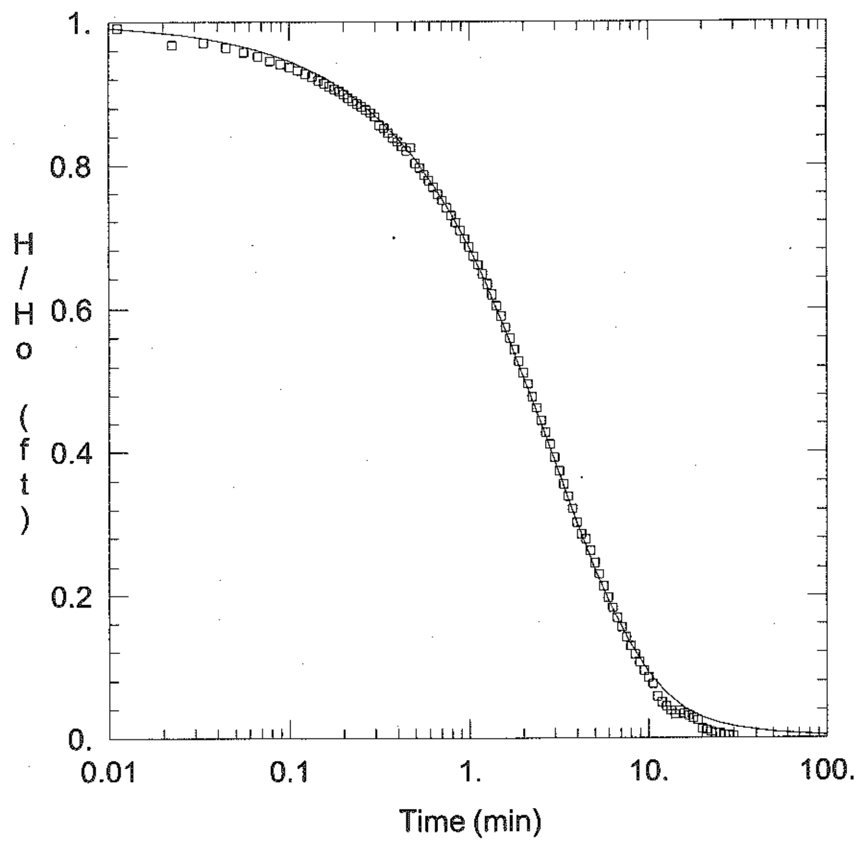
AQUIFER DATA

Saturated Thickness: 13.43 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-03)

Initial Displacement: 1.781 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 13.43 ft



MW-03C RISING TEST #1

Data Set: L:\...\Mw03cr1.aqt
Date: 11/12/03 Time: 09:35:43

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-03C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

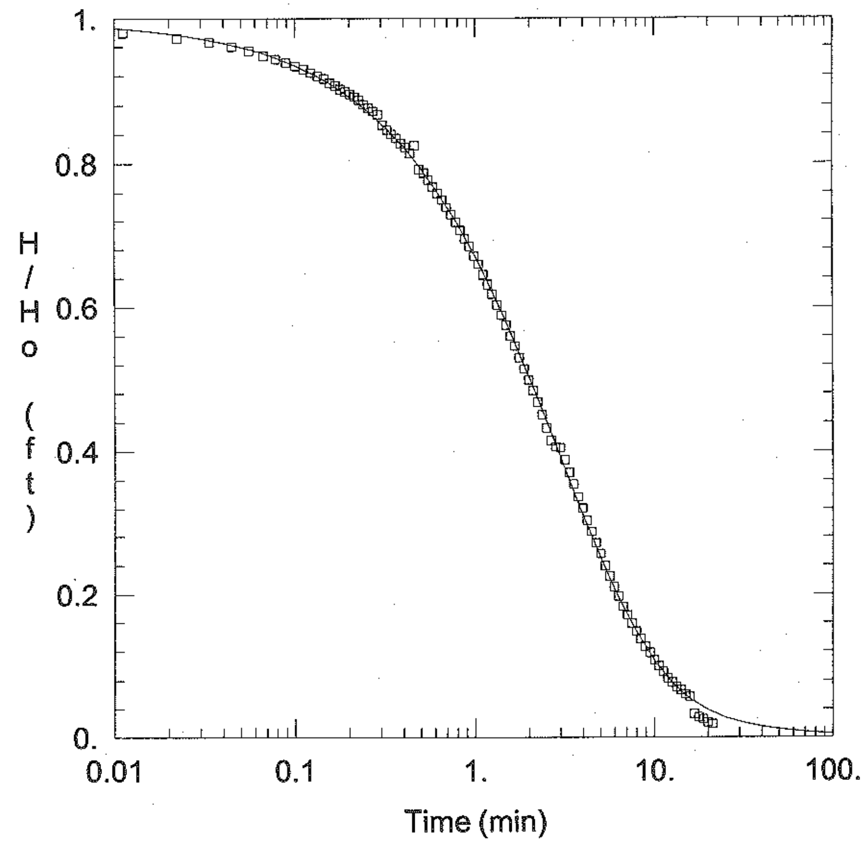
$T = 0.07659\ cm^2/sec$
$S = 0.0002051$

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-03C)

Initial Displacement: 3.242 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.125 ft
Total Well Penetration Depth: 41.7 ft



MW-03C RISING TEST #2

Data Set: L:\...\MW03CR2.AQT
Date: 11/12/03 Time: 09:35:37

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-03C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 0.05767 cm^2/sec
S = 0.001393

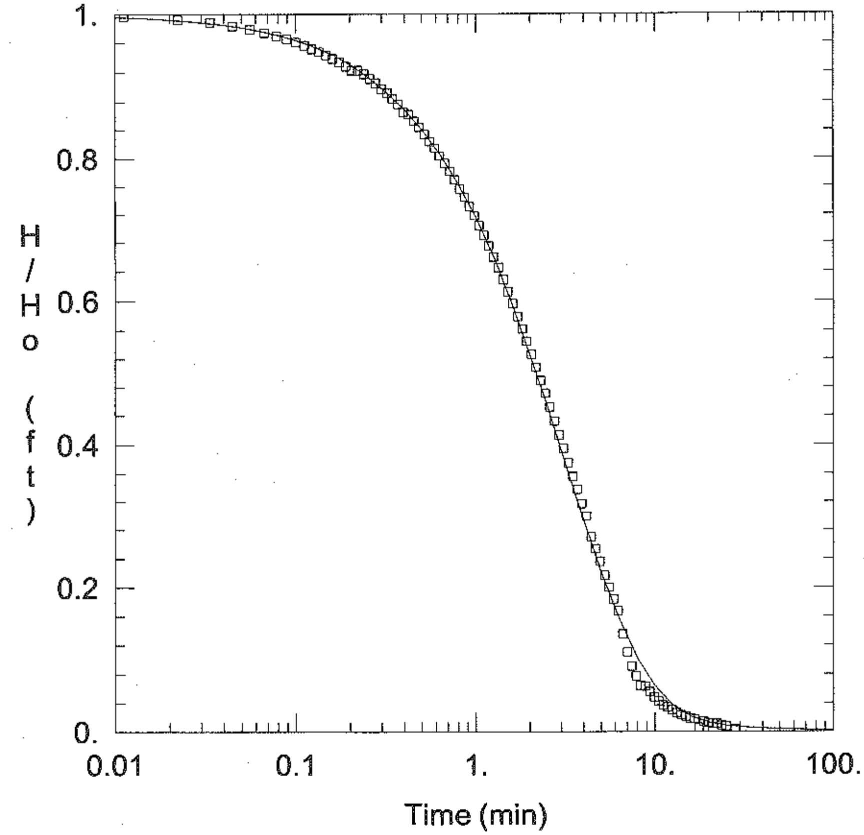
AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-03C)

Initial Displacement: 2.491 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.125 ft
Total Well Penetration Depth: 41.7 ft



MW-03C FALLING TEST #1

Data Set: L:\...\MW03CF1.AQT
Date: 11/12/03 Time: 09:35:49

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-03C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

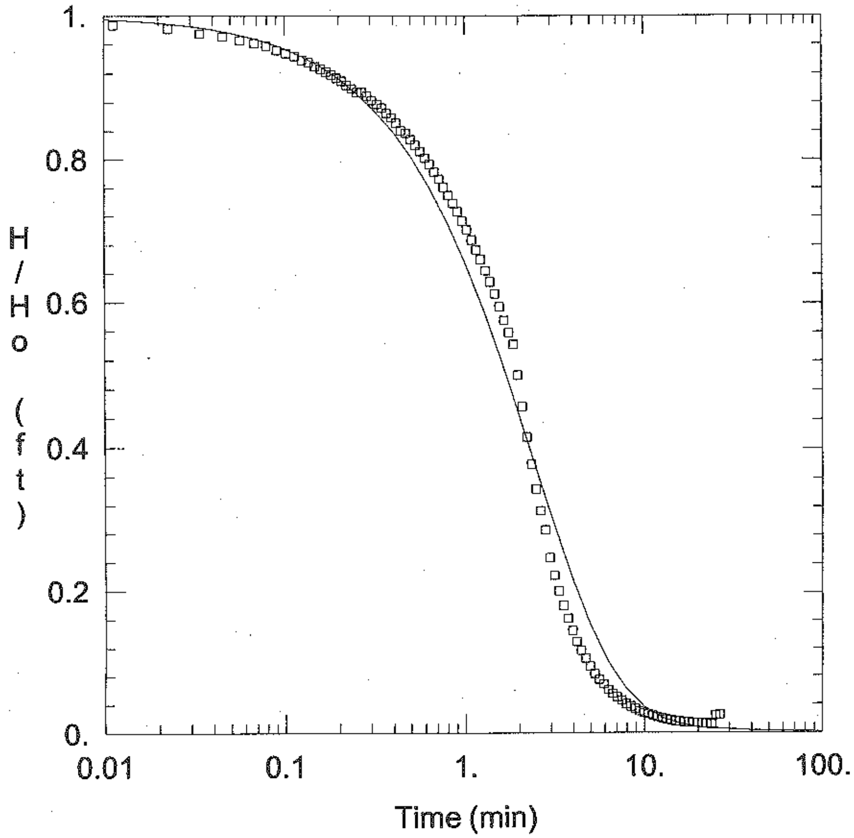
T = 0.2054 cm^2/sec
S = 1.E-10

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-03C)

Initial Displacement: 3.42 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.125 ft
Total Well Penetration Depth: 41.7 ft



MW-03C FALLING TEST #2

Data Set: L:\...\MW03CF2.AQT
Date: 11/12/03 Time: 09:35:30

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-03C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

$T = 0.2621\ cm^2/sec$
$S = 1.E\text{-}10$

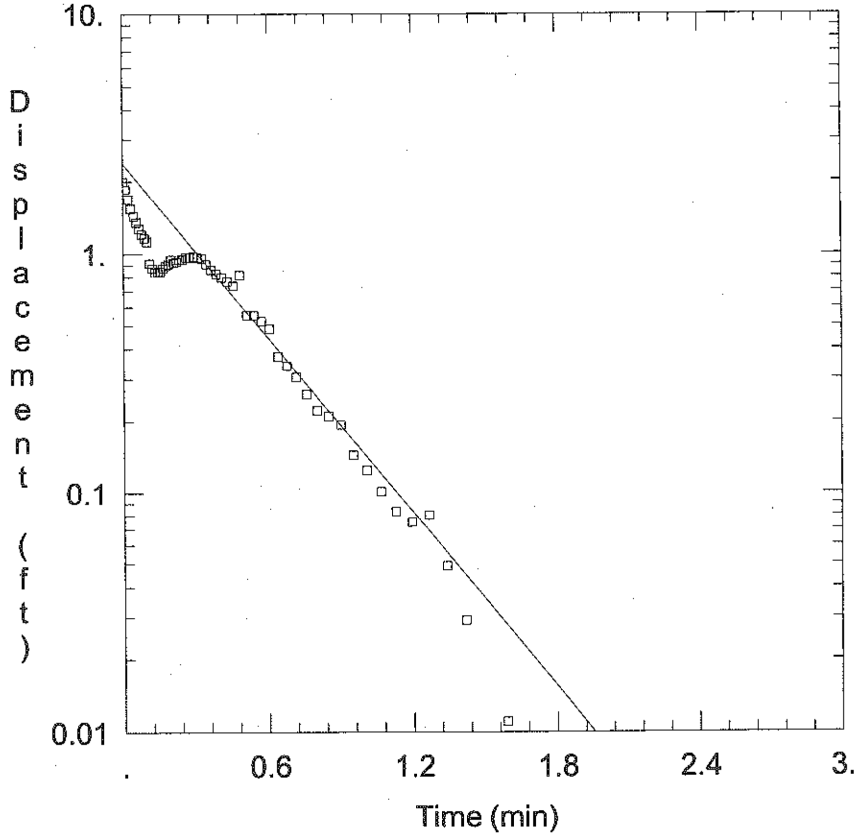
AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-03C)

Initial Displacement: 3.553 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.125 ft
Total Well Penetration Depth: 41.7 ft



MW-09 RISING TEST #1

Data Set: L:\...\MW09R1.AQT
Date: 11/12/03 Time: 08:51:51

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-09
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

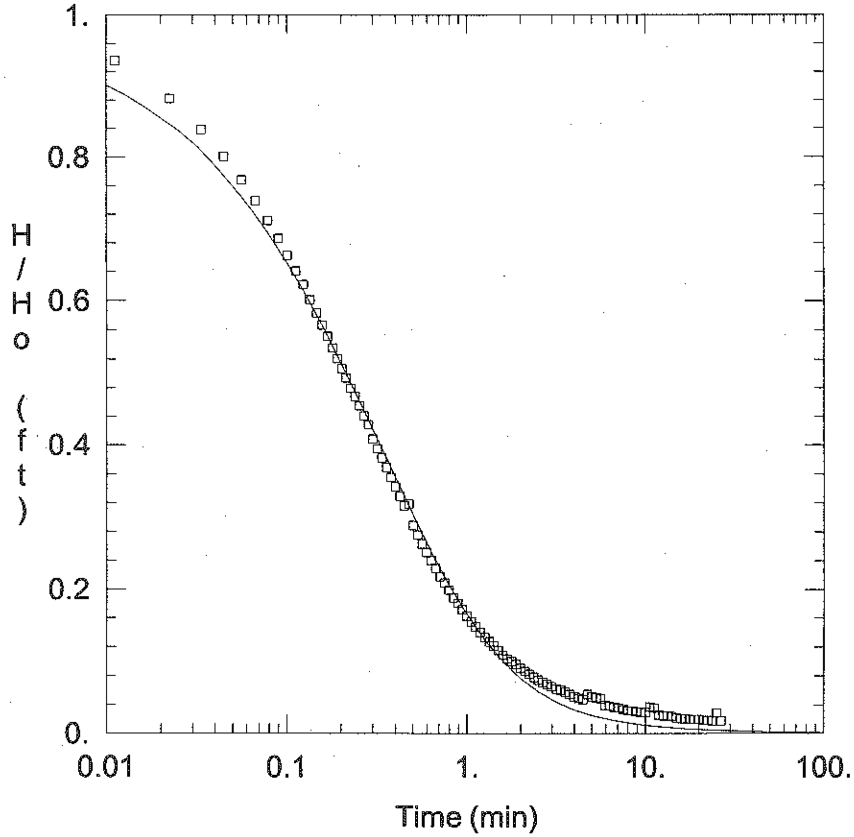
K = 0.003216 cm/sec
y0 = 2.371 ft

AQUIFER DATA

Saturated Thickness: 6.06 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-09)

Initial Displacement: 1.995 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 6.06 ft



MW-09C RISING TEST #1

Data Set: L:\...\Mw09cr1.aqt
Date: 11/12/03 Time: 09:38:09

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-09C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 0.2645 cm^2/sec
S = 0.02495

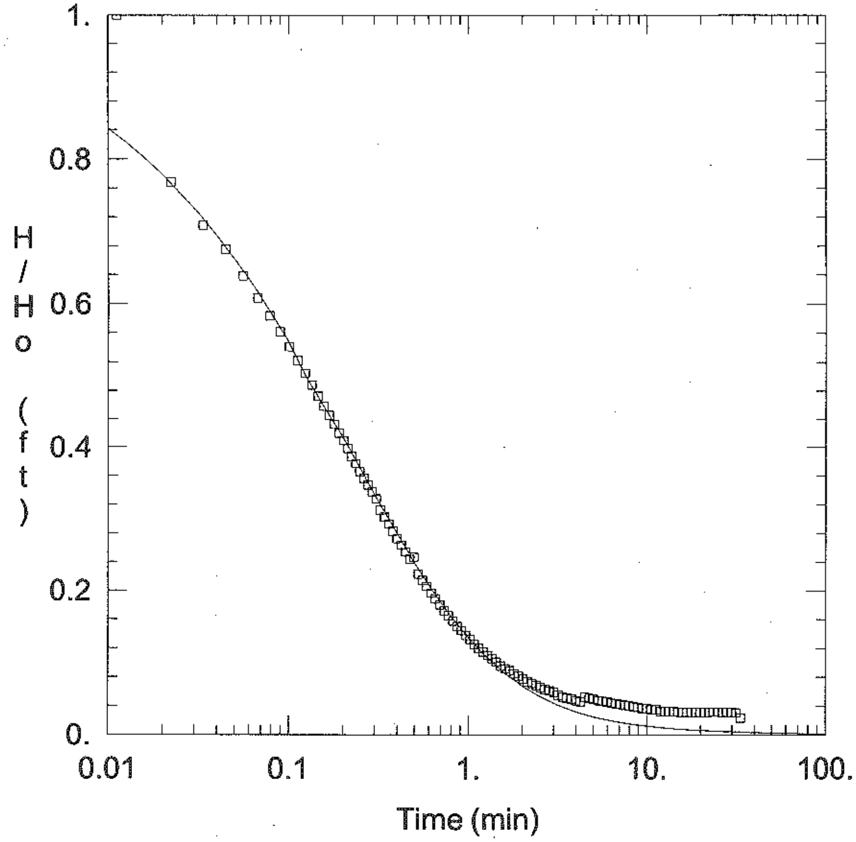
AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-09C)

Initial Displacement: 2.947 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.125 ft
Total Well Penetration Depth: 47.4 ft



MW-09C RISING TEST #2

Data Set: L:\...\MW09CR2.AQT
Date: 11/12/03 Time: 09:39:57

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-09C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 0.2384 cm^2/sec
S = 0.1

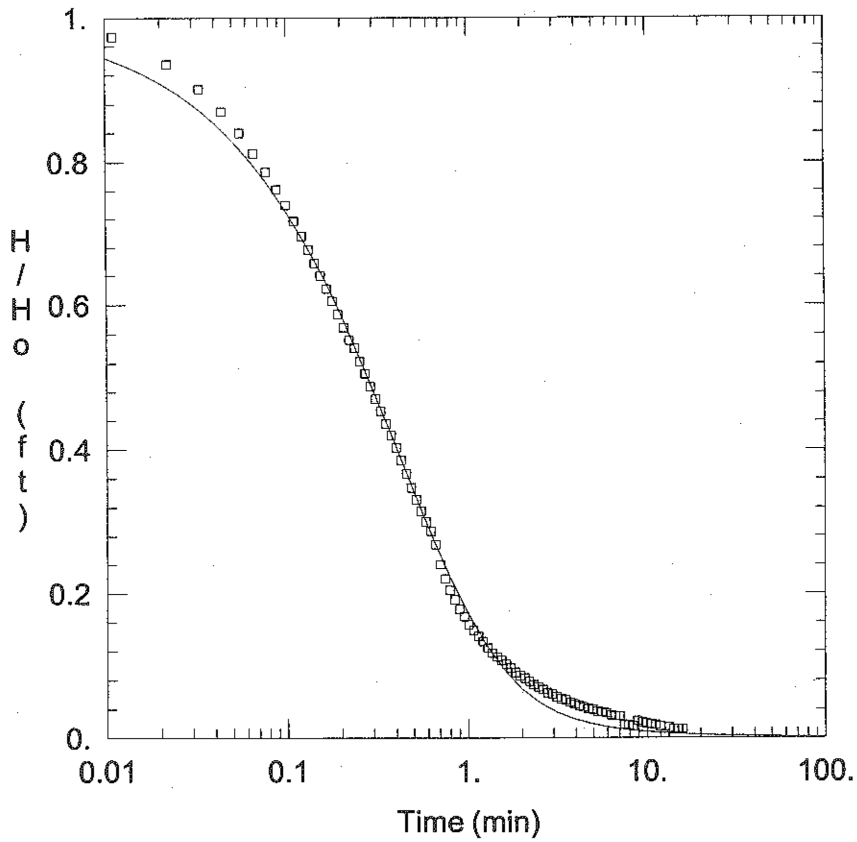
AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-09C)

Initial Displacement: 3.47 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.125 ft
Total Well Penetration Depth: 47.4 ft



MW-09C FALLING TEST #1

Data Set: L:\...\MW09CF1.AQT
Date: 11/12/03 Time: 09:38:36

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-09C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

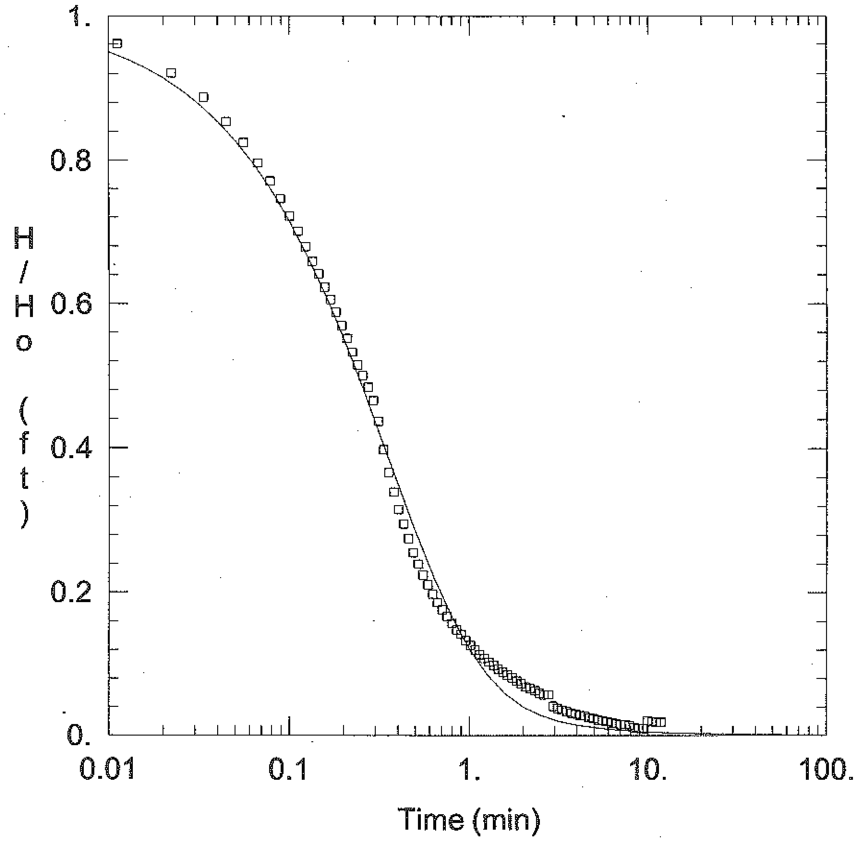
T = 0.3754 cm^2/sec
S = 0.002389

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-09C)

Initial Displacement: 2.603 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.125 ft
Total Well Penetration Depth: 47.4 ft



MW-09C FALLING TEST #2

Data Set: L:\...\MW09CF2.AQT
Date: 11/12/03 Time: 09:39:09

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-09C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 0.6146 cm^2/sec
S = 0.0003186

AQUIFER DATA

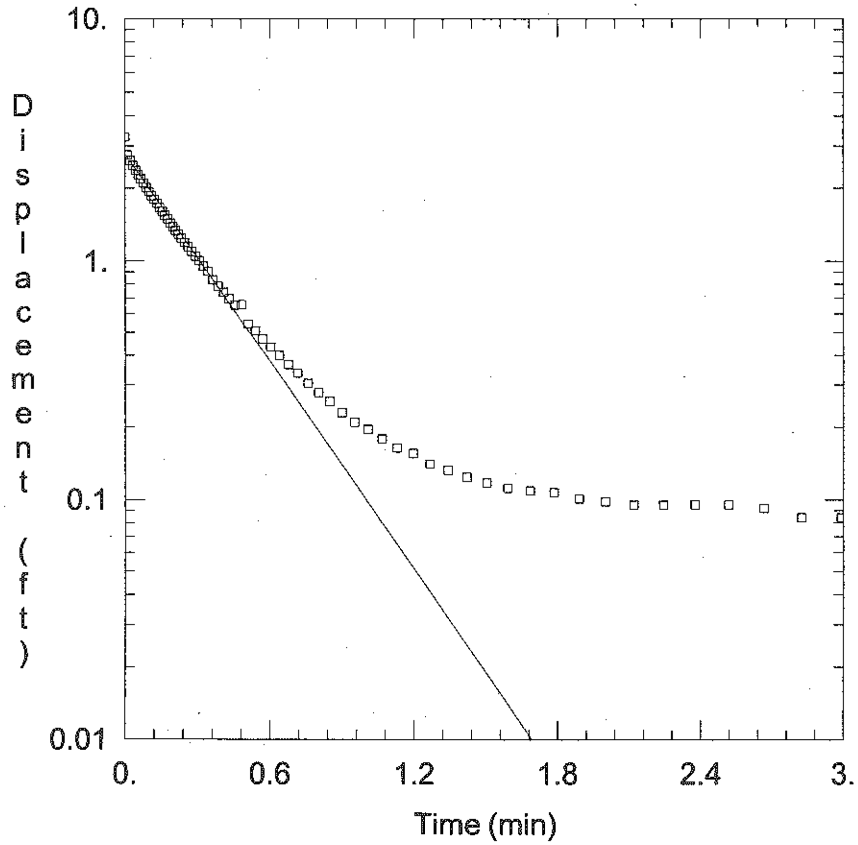
Saturated Thickness: 50. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-09C)

Initial Displacement: 2.687 ft
Wellbore Radius: 0.125 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.125 ft
Total Well Penetration Depth: 47.4 ft



MW-OS1 RISING TEST #1

Data Set: L:\...\MWOS1R1.AQT
Date: 11/12/03 Time: 09:05:37

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS1
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.004128 cm/sec
y0 = 2.781 ft

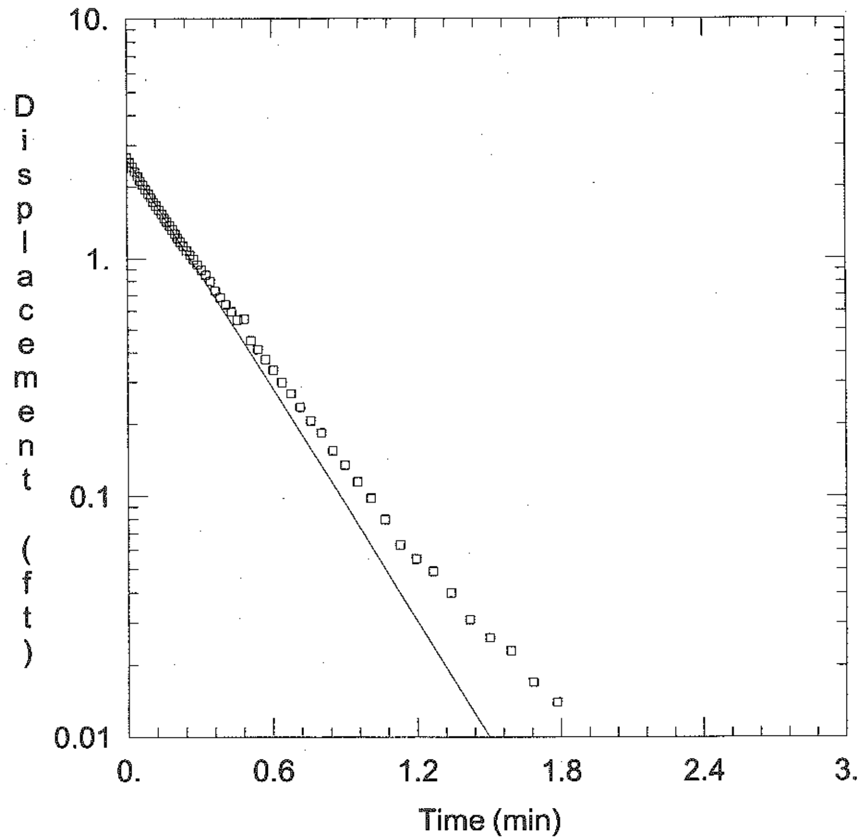
AQUIFER DATA

Saturated Thickness: 9.14 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS1)

Initial Displacement: 3.265 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 9.14 ft



MW-OS1 RISING TEST #2

Data Set: L:\...\Mwos1r2.aqt
Date: 11/12/03 Time: 09:07:07

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS1
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

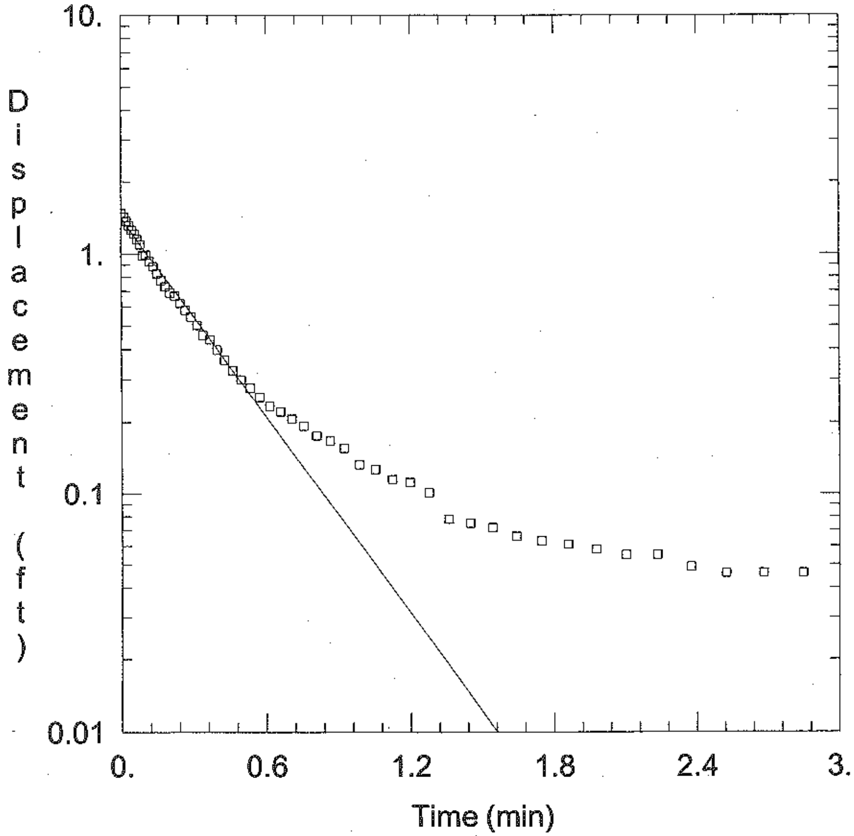
K = 0.004603 cm/sec
y0 = 2.619 ft

AQUIFER DATA

Saturated Thickness: 9.14 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS1)

Initial Displacement: 2.649 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 9.14 ft



MW-OS1 FALLING TEST #1

Data Set: L:\...\MWOS1F1.AQT
Date: 11/12/03 Time: 09:07:46

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS1
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

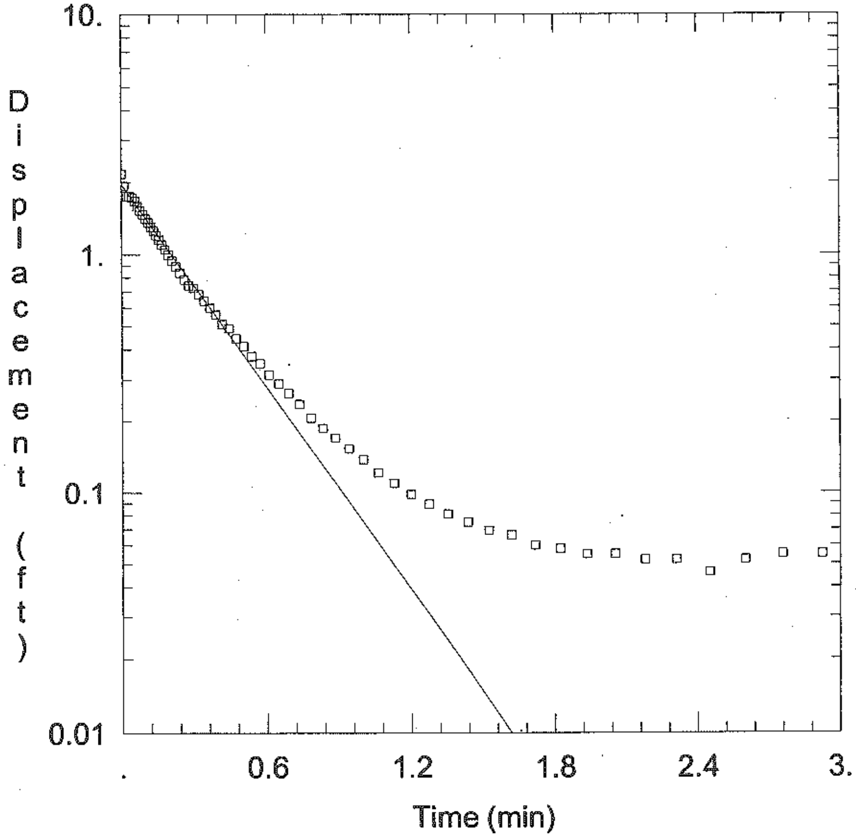
K = 0.003931 cm/sec
y0 = 1.407 ft

AQUIFER DATA

Saturated Thickness: 9.14 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS1)

Initial Displacement: 1.47 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 9.14 ft



MW-OS1 FALLING TEST #2

Data Set: L:\...\MWOS1F2.AQT
Date: 11/12/03 Time: 09:06:21

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS1
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

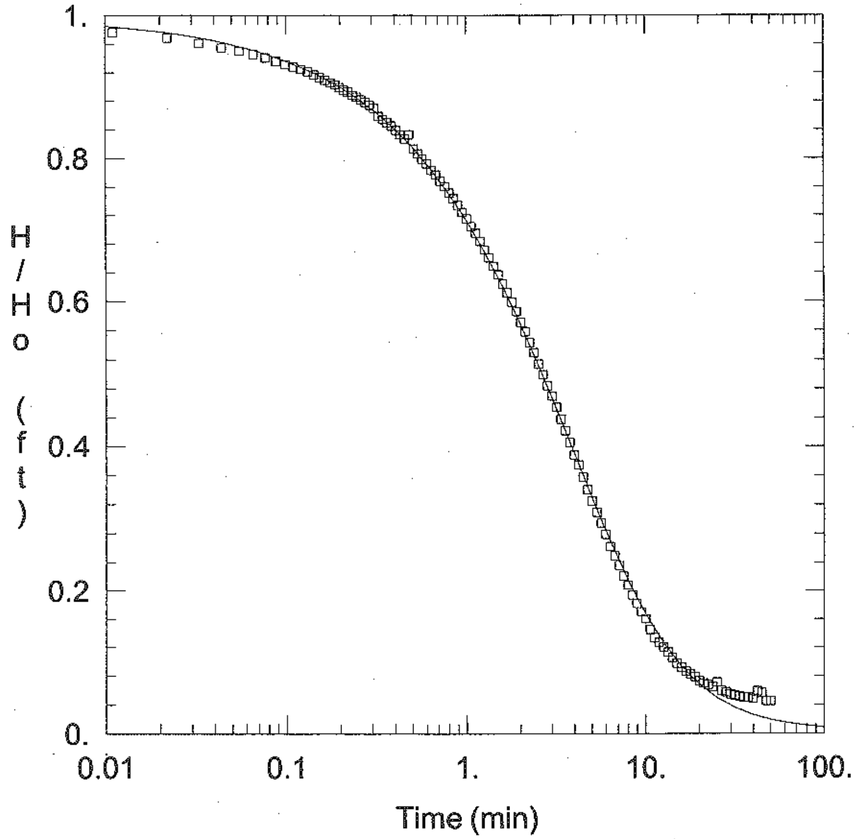
K = 0.00405 cm/sec
y0 = 1.965 ft

AQUIFER DATA

Saturated Thickness: 9.14 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS1)

Initial Displacement: 2.167 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 9.14 ft



MW-OS3C RISING TEST #1

Data Set: L:\...\MWOS3CR1.AQT
Date: 11/12/03 Time: 09:45:13

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS3C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

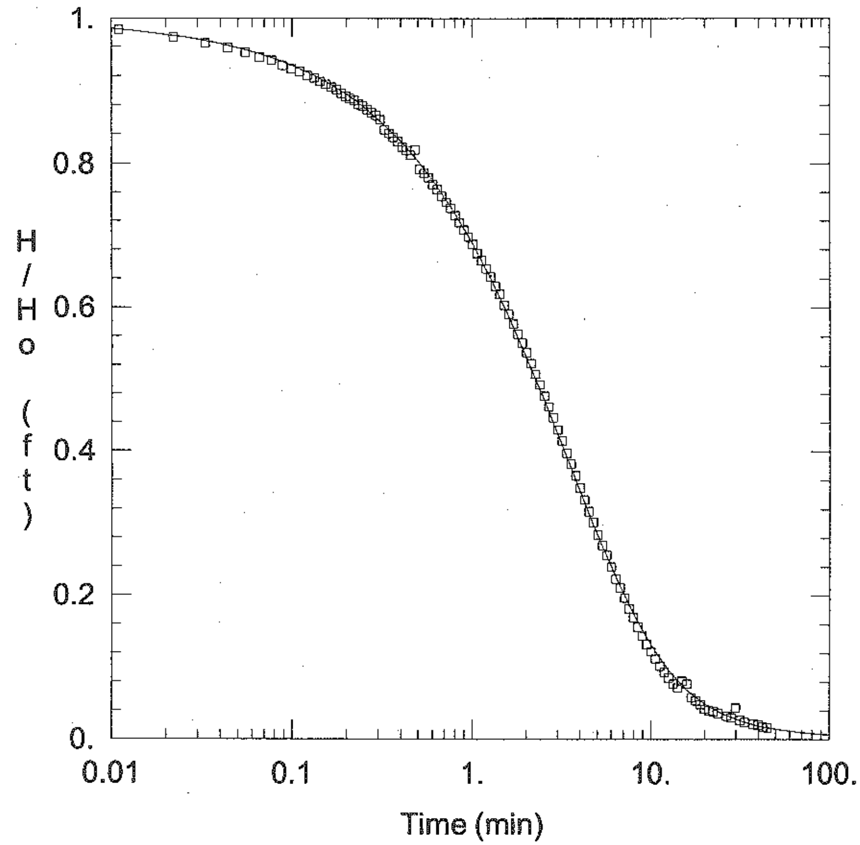
T = 0.03573 cm^2/sec
S = 0.0005696

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS3C)

Initial Displacement: 3.143 ft
Wellbore Radius: 0.3333 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.3333 ft
Total Well Penetration Depth: 36.6 ft



MW-OS3C RISING TEST #2

Data Set: L:\...\MWOS3CR2.AQT
Date: 11/12/03 Time: 09:45:07

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS3C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

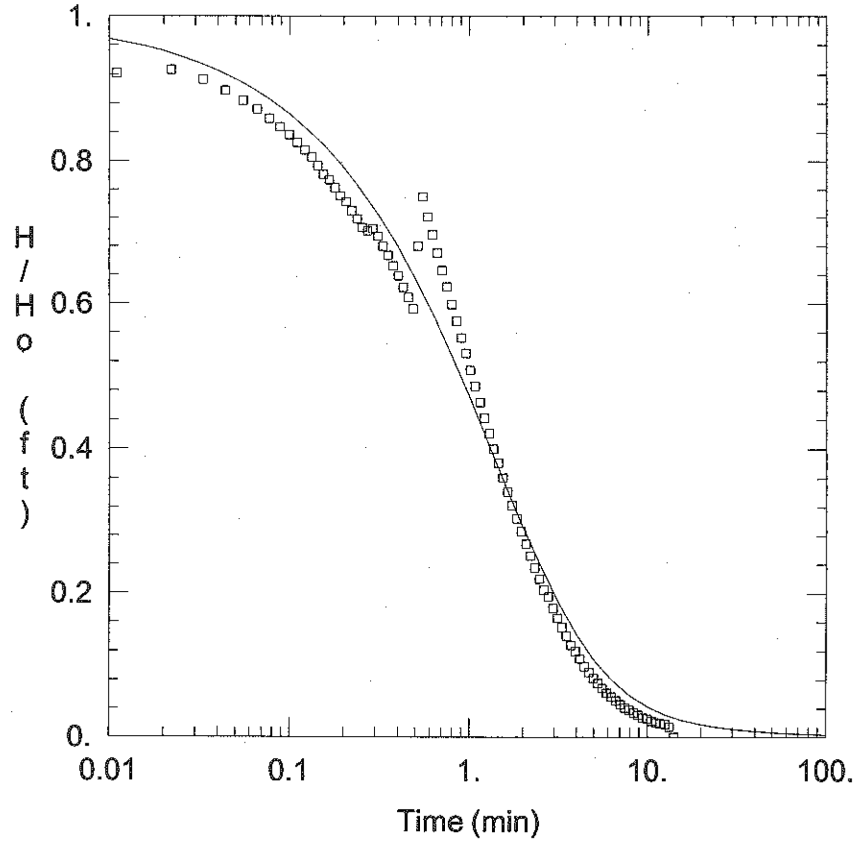
T = 0.04657 cm^2/sec
S = 0.0003364

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS3C)

Initial Displacement: 2.323 ft
Wellbore Radius: 0.3333 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.3333 ft
Total Well Penetration Depth: 36.6 ft



MW-OS3C FALLING TEST #1

Data Set: L:\...\MWOS3CF1.AQT
Date: 11/12/03 Time: 09:45:01

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS3C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 0.09707 cm^2/sec
S = 0.00081

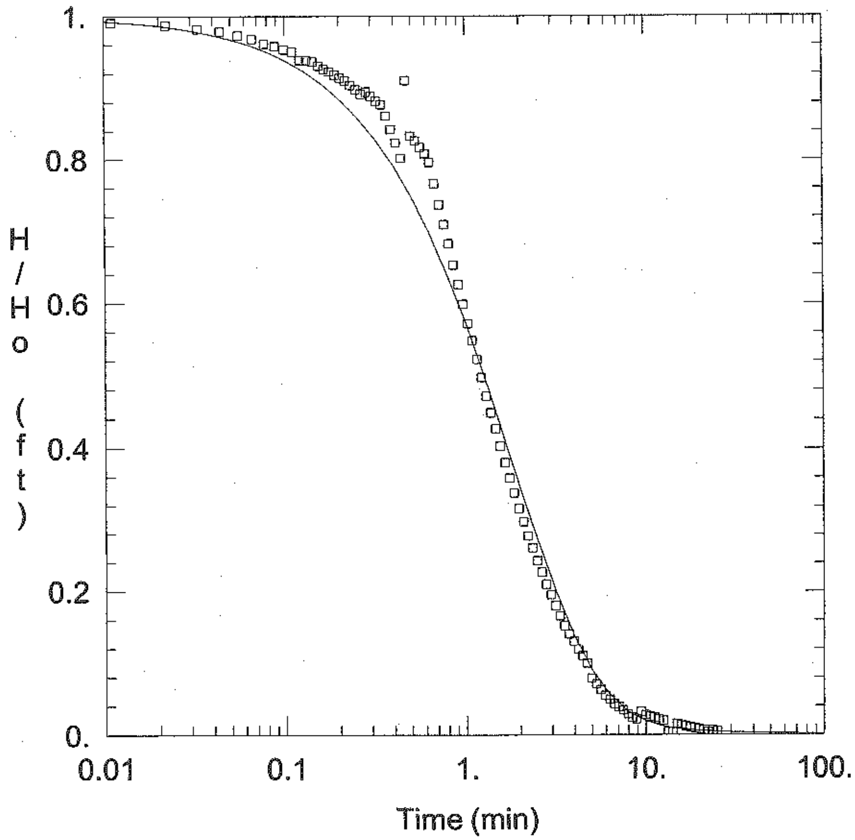
AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS3C)

Initial Displacement: 2.734 ft
Wellbore Radius: 0.3333 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.3333 ft
Total Well Penetration Depth: 36.6 ft



MW-OS3C FALLING TEST #2

Data Set: L:\...\MWOS3CF2.AQT
Date: 11/12/03 Time: 09:45:23

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS3C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 0.3226 cm^2/sec
S = 1.E-10

AQUIFER DATA

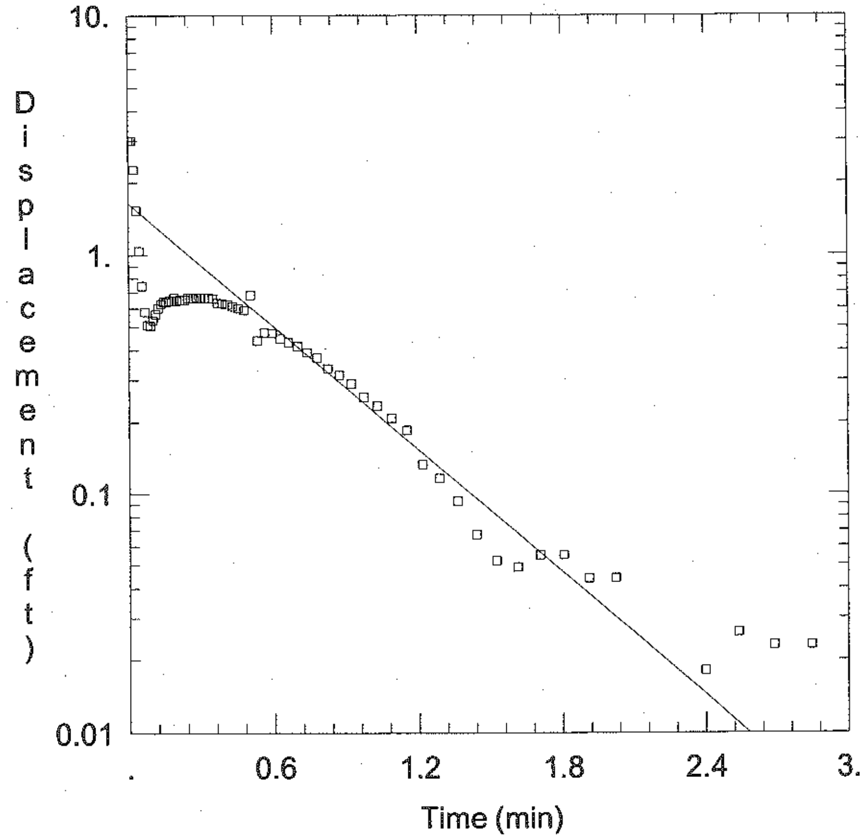
Saturated Thickness: 50. ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS3C)

Initial Displacement: 2.556 ft
Wellbore Radius: 0.3333 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.3333 ft
Total Well Penetration Depth: 36.6 ft



MW-OS3 RISING TEST #1

Data Set: L:\...\MWOS3R1.AQT
Date: 11/12/03 Time: 09:16:28

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS3
Test Date: 11/03/03

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.002433 cm/sec
y0 = 1.635 ft

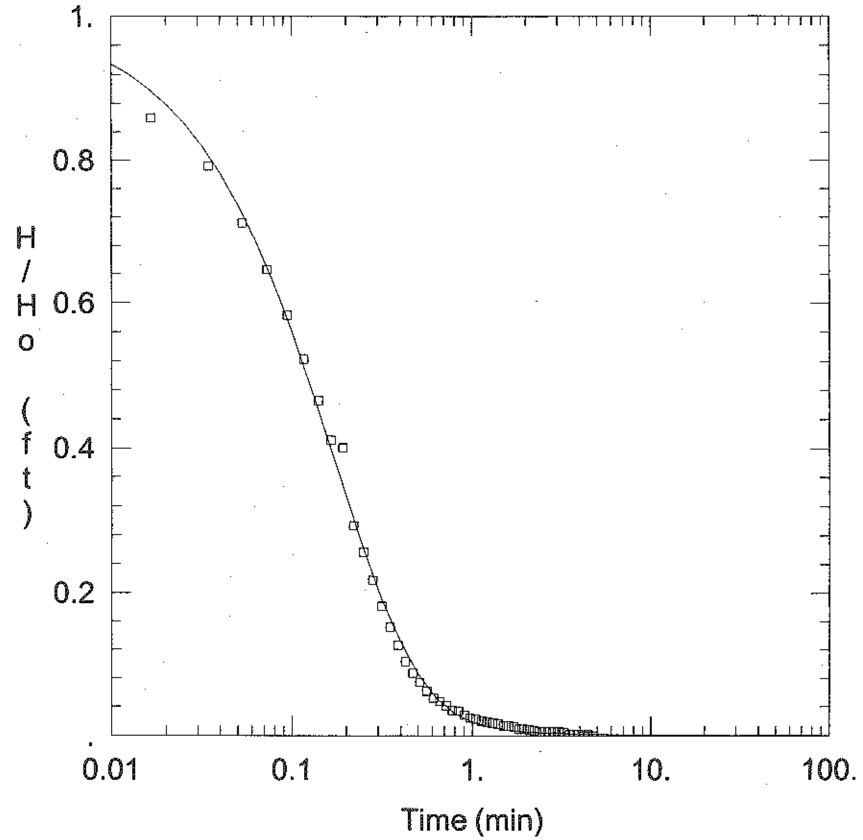
AQUIFER DATA

Saturated Thickness: 8.8 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS3)

Initial Displacement: 2.985 ft
Wellbore Radius: 0.0833 ft
Screen Length: 5. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.0833 ft
Total Well Penetration Depth: 8.8 ft



MW-OS1C RISING TEST #1

Data Set: L:\...\Mwos1cr1.aqt
Date: 11/12/03 Time: 09:51:07

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS1C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

$T = 3.041\ cm^2/sec$
$S = 7.508E-10$

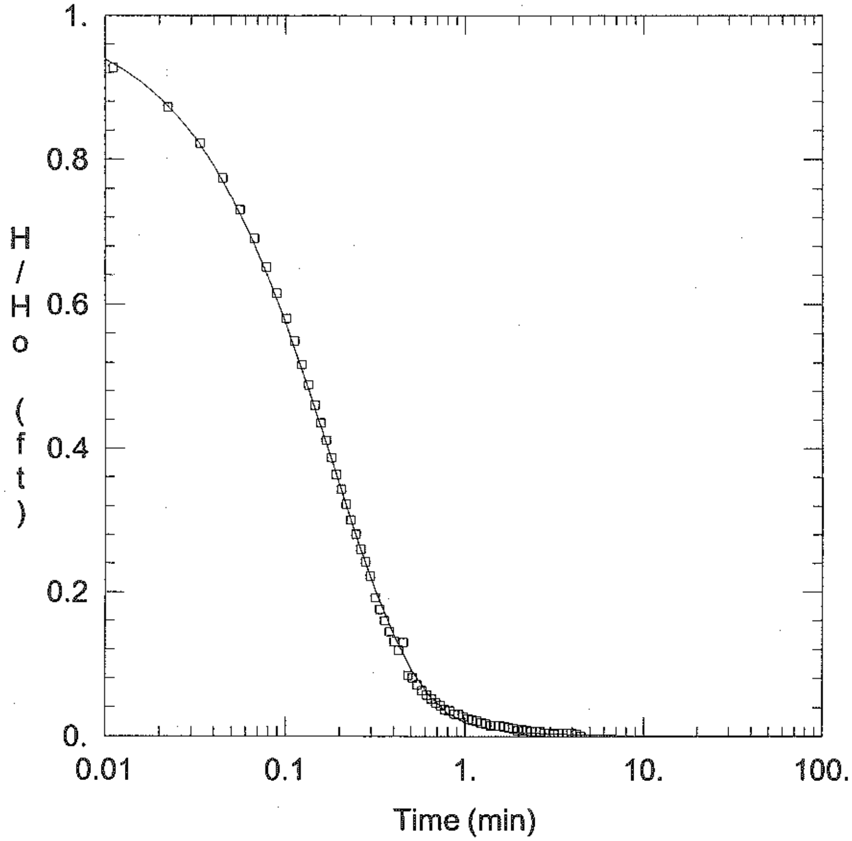
AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS1C)

Initial Displacement: 2.155 ft
Wellbore Radius: 0.3333 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.3333 ft
Total Well Penetration Depth: 44.36 ft



MW-OS1C RISING TEST #2

Data Set: L:\...\MWOS1CR2.AQT
Date: 11/12/03 Time: 09:51:18

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS1C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 3.209 cm^2/sec
S = 1.E-10

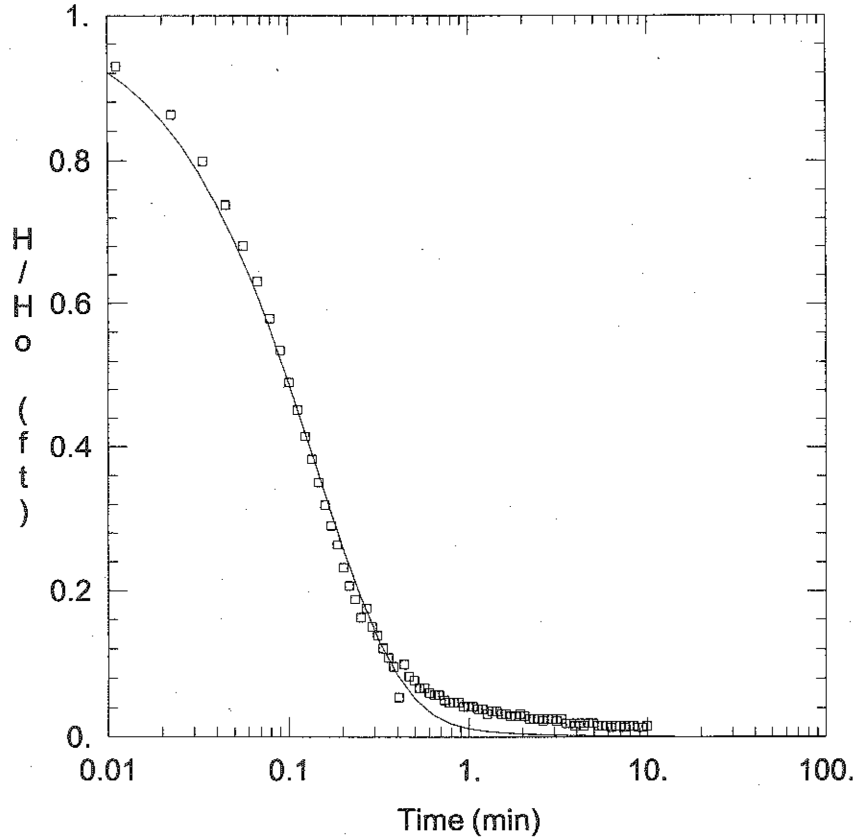
AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS1C)

Initial Displacement: 2.128 ft
Wellbore Radius: 0.3333 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3

Casing Radius: 0.0833 ft
Well Skin Radius: 0.3333 ft
Total Well Penetration Depth: 44.36 ft



MW-OS1C FALLING TEST #1

Data Set: L:\...\MWOS1CF1.AQT
Date: 11/12/03 Time: 09:50:57

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS1C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

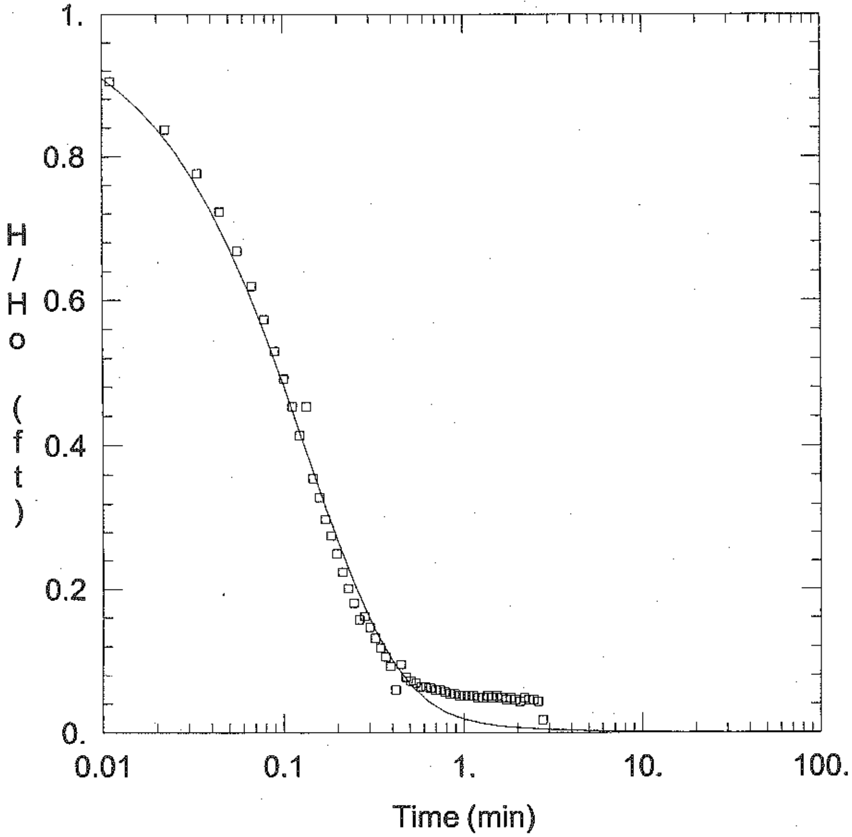
T = 4.021 cm^2/sec
S = 2.655E-10

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS1C)

Initial Displacement: 0.91 ft
Wellbore Radius: 0.3333 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.3333 ft
Total Well Penetration Depth: 44.36 ft



MW-OS1C FALLING TEST #2

Data Set: L:\...\MWOS1CF2.AQT
Date: 11/12/03 Time: 09:51:28

PROJECT INFORMATION

Company: Earth Tech/Weston
Client: JCI
Project: 65468
Test Location: Fowlerville, MI
Test Well: MW-OS1C
Test Date: 11/03/03

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 2.273 cm^2/sec
S = 1.671E-06

AQUIFER DATA

Saturated Thickness: 50. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-OS1C)

Initial Displacement: 1.127 ft
Wellbore Radius: 0.3333 ft
Screen Length: 7. ft
Gravel Pack Porosity: 0.3
Casing Radius: 0.0833 ft
Well Skin Radius: 0.3333 ft
Total Well Penetration Depth: 44.36 ft

APPENDIX D-3

GROUNDWATER VERTICAL HYDRAULIC GRADIENT CALCULATIONS

APPENDIX D-3
GROUNDWATER VERTICAL HYDRAULIC GRADIENT CALCULATIONS
SHALLOW/INTERMEDIATE/DEEP PIEZOMETER COMPARISON
JCI - FOWLERVILLE

Well Nests*	Water Elevations (ft MSL)	Screen Length	Screen Top Elevation** (ft. MSL)	Screen Midpoint Elevation (ft. MSL)	Gradient	Direction	Zones
MW-B1	880.40	10.0	879.0	874.0			Shallow
MW-B2	880.26	5.0	851.4	848.9	0.0056	Downward	Deep
MW-BCK1	882.66	10.0	881.7	876.7			Shallow
MW-BCK3	883.05	5.0	861.6	859.1	-0.0222	Upward	Intermediate
MW-BCK3	883.05	5.0	861.6	859.1			Intermediate
MW-BCK2	882.24	5.0	850.3	847.8	0.0716	Downward	Deep
MW-BCK1	882.66	10.0	881.7	876.7			Shallow
MW-BCK2	882.24	5.0	850.3	847.8	0.0145	Downward	Deep
MW-26	881.25	5.0	879.8	877.3			Shallow/GW/EX well
MW-J3	880.22	5.0	861.8	859.3	0.0573	Downward	Intermediate
MW-J3	880.22	5.0	861.8	859.3			Intermediate
MW-J2	880.22	5.0	852.3	849.8	0.0000	Upward	Deep
MW-26	881.25	5.0	879.8	877.3			Shallow/GW/EX well
MW-J2	880.22	5.0	852.3	849.8	0.0375	Downward	Deep
MW-03	882.91	5.0	878.1	875.6			Shallow
MW-03C	882.93	5.0	846.2	843.7	-0.0006	Upward	Deep
MW-09	882.31	5.0	882.0	879.5			Shallow
MW-09B	882.26	5.0	857.4	854.9	0.0020	Downward	Intermediate
MW-09B	882.26	5.0	857.4	854.9			Intermediate
MW-09C	882.32	5.0	839.9	837.4	-0.0034	Upward	Deep
MW-09	882.31	5.0	882.0	879.5			Shallow
MW-09C	882.32	5.0	839.9	837.4	-0.0002	Upward	Deep
MW-13	879.76	5.0	875.7	873.2			Shallow
MW-13C	879.82	5.0	847.7	845.2	-0.0021	Upward	Deep
MW-14	879.58	5.0	874.5	872.0			Shallow
MW-14C	879.78	5.0	848.3	845.8	-0.0076	Upward	Deep
MW-15	879.52	10.0	876.7	874.2			Shallow
MW-15C	880.04	5.0	857.6	855.1	-0.0271	Upward	Deep
MW-17	881.37	5.0	882.0	879.5			Shallow
MW-C2	881.14	5.0	847.4	844.9	0.0067	Downward	Deep
MW-22	878.97	5.0	876.2	873.7			Shallow
MW-F2	879.87	5.0	842.6	840.1	-0.0267	Upward	Deep
MW-24	879.65	5.0	876.1	873.6			Shallow
MW-A2	879.76	10.0	858.1	853.1	-0.0054	Upward	Deep
MW-27	881.94	5.0	875.3	872.8			Shallow
MW-27C	881.99	5.0	855.3	852.8	-0.0025	Upward	Deep
MW-28	883.81	5.0	872.5	870.0			Shallow
MW-28C	884.14	5.0	844.3	841.8	-0.0117	Upward	Deep

APPENDIX D-3
GROUNDWATER VERTICAL HYDRAULIC GRADIENT CALCULATIONS
SHALLOW/INTERMEDIATE/DEEP PIEZOMETER COMPARISON
JCI - FOWLERVILLE

Well Nests*	Water Elevations (ft MSL)	Screen Length	Screen Top Elevation** (ft. MSL)	Screen Midpoint Elevation (ft. MSL)	Gradient	Direction	Zones
MW-29	882.25	5.0	878.3	875.8			Shallow
MW-29C	882.21	5.0	856.2	853.7	0.0018	Downward	Deep
MW-OS1	879.37	5.0	875.7	873.2			Shallow
MW-OS1C	879.71	5.0	853.3	850.8	-0.0151	Upward	Deep
MW-OS3	879.58	5.0	876.3	873.8			Shallow
MW-OS3C	879.64	5.0	848.5	846.0	-0.0022	Upward	Deep

NOTES:

* Well Nests are based upon Existing Well Nests during December 2003.

** Top of screen data was taken from: TABLE 1-Well Construction and Water Level Elevation Summary, JCI - Fowlerville, Michigan, 21 January 2004.
Water levels were measured on December 18, 2003.